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Railway Age

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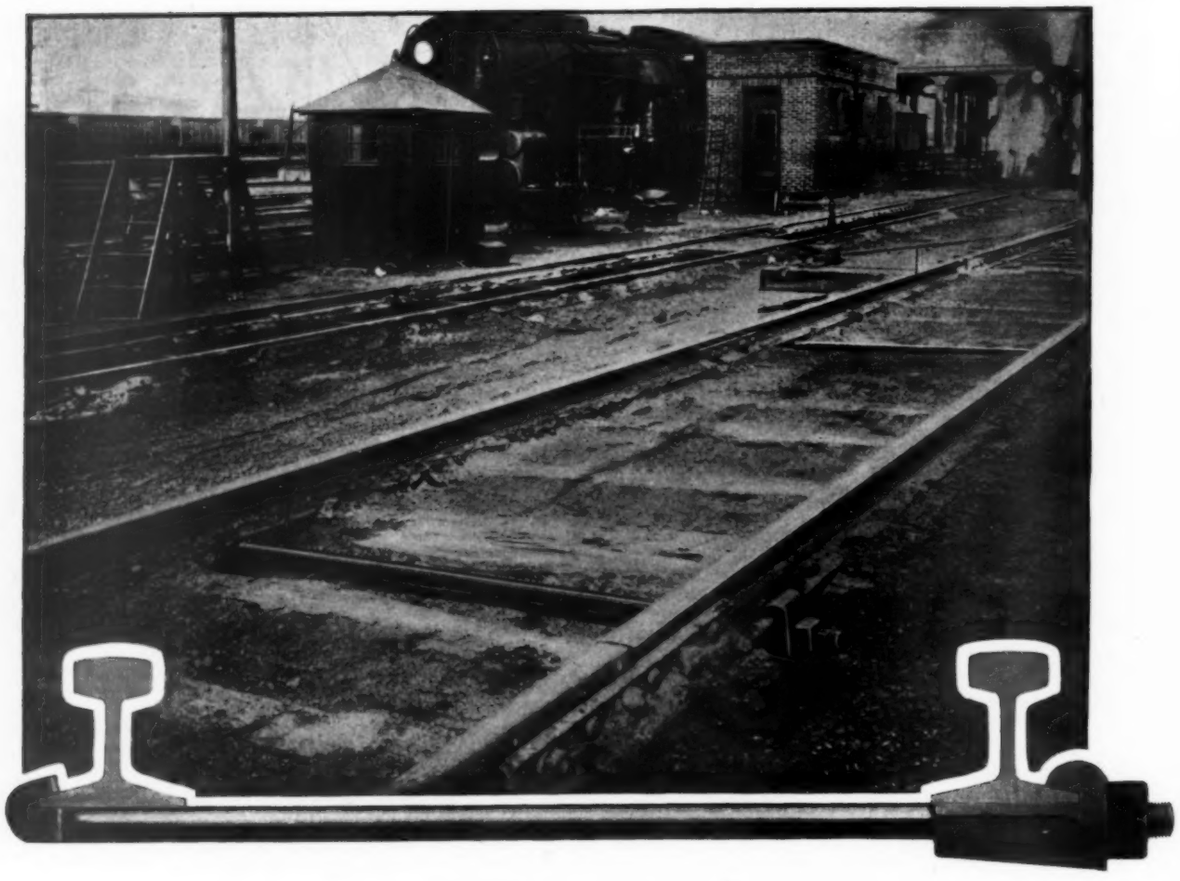

Above photograph shows Bethlehem Gage Rods used just ahead of points of switch at large railroad terminal.

There is no "kicking out" with this Gage Rod

The Bethlehem Gage Rod provides a means of distributing the lateral thrust of the wheels and of holding the track in correct alignment, thus putting both rails to work and preventing undue strain on spikes, tie plates and ties. This equalization of strain on track fastenings reduces track maintenance costs by eliminating frequent regaging of track.

Wherever there is difficulty in holding track to gage, you can use the Bethlehem Gage Rod to advantage—on straight track under heavy traffic conditions, at switches, on temporary track, on turntable leads. It is especially important on curves, where it eliminates the tendency of the outside joints to "kick out."

The Bethlehem Gage Rod is a one-piece forging with a solid steel hook on one end and a heavy adjustable steel clip on the other end. It can be furnished either insulated or non-insulated. The non-insulated can be quickly changed to the insulated type by removing the standard adjustable clip and substituting the insulated clip. This feature is an important advantage on railroads that are being electrified.

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Railway Age

Vol. 86, No. 14 *April 6, 1929*

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March Equipment Orders

THE equipment orders for the month of March showed a decided increase over the totals reported for the corresponding period in 1928 and, with the exception of freight cars, were far in advance of the month of February this year. Orders for 142 locomotives were placed during the past month, as compared with 15 locomotives reported during March, 1929, and 68 in February this year. Freight car orders totaled 11,068 units as compared with 1,997 units purchased in March, 1928, and 14,393 ordered during February, 1929. Passenger car orders also showed an increase, both over the total for March, 1928, and February of this year, with 53 units of this equipment bought, comparing with 45 units and 48 units respectively for the two other periods. A similar increase over last year also was reported in the orders for iron and steel, with 21,000 tons of structural steel purchased during the past month in comparison with 2,900 tons bought in March, 1928; and 43,500 tons of rails ordered in March this year, as compared with 30,000 tons purchased during the corresponding period a year ago. With inquiries already outstanding for more than 7,000 freight cars and 100 locomotives, prospects appear favorable for a continuation of activity in equipment buying during the month of April.

Should Railroads Engage in All Forms of Transportation?

THE belief that railway companies should enlarge their activities to embrace other methods of transportation, thereby becoming all-round transportation enterprises instead of railroads alone, has been expressed rather frequently of late The most recent expression of this opinion by a railroad executive, which is probably as forthright and emphatic a statement on the subject as has yet been made, appears in an article by General W. W. Atterbury, president of the Pennsylvania, in the current issue of the Review of Reviews. In this article General Atterbury says:

> The railroads can no longer confine themselves to rail transportation, but must also enter the business of transportation by motor car and airplane. This position is based on the belief that our country's future needs for mass transportation at low cost can be supplied only by a thoroughly co-ordinated national system of transportation, in which the railroad, the motor car, and the airplane, each functioning with efficiency in its most useful field, support and supplement one another. The railroads may eventually enter seriously into the shipping business and, to complete the cycle of transportation, do the barge and coastwise work, where it is not prohibited by the Panama Canal Act. If that law is restrictive and against the public interest, it may be amended so as to permit the railroads to round out their transportation service.

It is interesting to watch the widening acceptance which this belief is achieving. It is also encouraging from a standpoint of the national well-being, since the choice of the most efficient medium for any given transportation task can be assured only when companies are ready to provide transportation by any of the various methods—rail, highway, waterway or air.

Maximum Service from Car Riders

ONE of the important problems in manually-operated gravity yards is the proper employment of car riders. This presents a twofold aspect; first, that of keeping the force properly adjusted to the fluctuations in traffic; and, second, that of obtaining the maximum service from the riders who are employed. It is difficult, in view of present service conditions, to determine the exact number of riders required to handle business expeditiously. If too few riders are employed the humping operations are delayed, while too many riders result in loss of time by the men in waiting for cars. The problem is most serious in yards where the number of cars handled varies widely from day to day. To control the situation, some such yards have arranged for advance information to be given of the number of cars enroute, so that the force may be adjusted accordingly. To obtain the maximum service, some roads have set up expected performance records for car riders, using as a basis the "number of rides per car-rider-hour." With this standard set up for each individual yard each day, yard supervisors are in a position to check their operations to determine if they are obtaining the maximum service from their car riders. The standard must be studied, of course, in the light of the traffic handled. Its value lies principally in supplying a measuring-stick whereby car-riding performance may be checked and lost time and delays avoided.

Rail Motor Reliability

RELIABILITY is recognized as the first requisite of all railway equipment used in rendering public service. Rail motor cars are no exception to this rule. While fuel economy, compactness, light weight and flexibility are advantages in rail motor power plants, consistent day-in and day-out performance, with freedom from failures and road delays, is the most important requisite. This point was one of many emphasized in the unusually comprehensive paper, "Rail Motors," recently presented by E. Wanamaker, electrical engineer of the Chicago, Rock Island & Pacific, before the Western Railway Club. Mr. Wanamaker said that the number of moving parts in the power plant should be minimized and the use of chains, bevel gears and other "monkey" motions, recognized as subject to rapid wear, should be avoided. He also urged the use

of internal combustion prime movers conservatively rated as to horsepower so that they will not be required to develop maximum power in normal operation, with consequent likelihood of failure and short engine life. Ample reserve capacity in the power plant affords the advantage of providing for emergencies for the handling of an additional car on occasions, or making up time on the regular schedule when the motor train has been put "in the hole" for "meets" with heavier trains. Modern rail motor equipment, when not overloaded, has made an enviable reputation for reliability on a number of roads, an average serviceability of 92 to 96 per cent being not uncommon, with individual instances of 98 per cent. Where performances such as this are secured, they are a real tribute to the designers of the equipment and to the railroad organizations responsible for its inspection and upkeep.

New Conditions Require New Measures

ONE of the most interesting current phenomena is the widespread competition for business, not merely between companies in the same industry, but between industries. A good example of this, which has been given much publicity, is afforded by the battle between a leading tobacco company, on one hand, and the manufacturers of confectionery on the other. Not content with competing for the dollars normally spent by the public for cigarettes, this tobacco company by means of a vigorous advertising campaign, is seeking to divert to cigarette purchases money which otherwise might be spent for candy. The position of the candy manufacturers is somewhat similar to that of the railways. No longer can one railway afford to be content with an effort to secure as many as possible of the dollars being spent for railway transportation in its territory. It must meet the drive for those dollars now being made by other industries, as represented by private automobiles, motor coaches, motor trucks, river barges and airplanes. The candy manufacturers can no longer assume that a given amount will be spent this year for candy; some of the anticipated expenditure may be made for cigarettes. Neither can the railways assume that so many dollars will be spent for railway transportation when there is much competition from other forms of transportation. A new order of salesmanship is required to meet the new conditions arising from this new competition. Those sales methods which were adequate when railway transportation enjoyed a virtual monopoly in the carrier field are less effective now. New conditions require new measures.

Railroad Losses from Revolution in Mexico

AMERICAN railroad men who have welcomed the revival of railroad activity in Mexico during the past few years must contemplate the present civil strife in that country with genuine chagrin. The increasing numbers of Mexican railway officers who have joined their American and Canadian fellows in the work of the various railway organizations, and the holding of several railway conventions in Mexico, have promoted cordial relations to the advantage of all. Of the principal railways in that country, the Southern Pacific of Mexico and the Mexican Railway have recently carried forward important improvement programs, the former of construction and the latter of electrification. The National Railways of Mexico have greatly improved their facilities, and their efficiency and traffic have been growing. Such were the fruits of even a few years of peace. With such evidence, it could not be doubted that a prolonged period of tranquility would bring a really great impetus to railway extension and development in that country. With such railway development would come a growing utilization of Mexico's rich natural resources and a rapid increase in the standards of living of the people. What will be the result of the present unrest? A dispatch from Mexico City to the Wall Street Journal estimates the damages already sustained by the railways at $5,000,000. Presumably this reflects merely the physical damage and takes no account of losses due to the stoppage of traffic in the zones of combat, or of the diminution of future traffic resulting from the war's destruction. Railroads can thrive only under conditions of peace, which foster industrial production. The railroad men of the North American continent will hope for an early end to Mexico's domestic troubles and the establishment and maintenance of conditions which will enable the railroads of Mexico to continue the steady improvement which had characterized them until the outbreak of the present disturbance.

An Unusual Collision in Scotland

REPORTING on a collision at Queen street, Glasgow, Scotland, on the London & North Eastern, on October 12, the British Ministry of Transport records a cause which to most readers would seem wholly unthinkable. A passenger train of five coaches, moving up a 2.3 per cent grade in a dark tunnel just outside the station, ran backward and collided with a switching train of empty coaches; and three passengers were killed and 52 injured. Three cars were wrecked. The engineman, a driver of 43 year's experience, *did not know that his train was moving backward*. The driving wheels had been continually slipping, though he was constantly using sand. The inspector, Colonel A. C. Trench, concludes that the train slipped backward while the engine was still working in forward motion! The guard, in his van, felt the train slackening speed, and opened his window, but because of dense smoke he could see nothing. The inspector suggests that the guard might have put out his arm so as to touch the tunnel wall and thus learn which way the train was moving, but does not blame him for not thinking to do this.

Cases of this kind are not unknown. Trainmen sitting in cabooses (as well as in locomotive cabs) have made similar mistakes, when the caboose, after standing motionless for a time, in the darkness of a tunnel, has started slowly by gravity backward, the men assuming that it was moving forward. In the Glasgow case there were lights along the sides of the tunnel but there was dense fog or smoke and the inspector does not doubt the engineman's statement that he saw none of these lights.

Cases of this kind serious enough to get into public records occur probably once in, say, 10 or 20 years; so infrequent that any lesson of experience which might teach trainmen to guard against this danger probably fades out of everybody's mind before the lesson is again needed.

In the Glasgow case the sand box on one side was clogged, due to a defective casting, very thin, which had allowed steam to leak and dampen the sand; and the other sander was working imperfectly. The insufficiency of the supply of sand was probably an element of the cause of the slipping, but no definite blame is placed on any person for these conditions. Under the very adverse conditions in the tunnel "no serious blame" is attributed to the engineman. The main blame is placed on the signalman (of 30 years' experience) who, in allowing the switching train to move before the passenger train had emerged from the upper end of the 3000-ft. tunnel, disregarded a rule provided as a special safeguard against the danger incident to trains becoming stalled in the tunnel. The inspector makes various recommendations concerning the operation of trains in this very difficult tunnel, the principal one being that pushing engines should be more generally employed, even on light trains. Steam sanding apparatus, he says, has its disadvantages; and he understands that there is a general tendency nowadays to revert to the dry type of sander.

Simplified Control Extends Usefulness of Signaling

THE development of the centralized dispatcher system with its simplified circuits has introduced a new era in railway signaling, not only as respects the control of power switches and the directing of trains by signal indication, but in numerous other respects. The most important feature in the design of these circuits is the minimum requirement for line wires, enabling an installation to be extended over an entire division without an exorbitant expenditure for line wire.

Having accomplished this result in several ways that have proved satisfactory in nearly two years' service, it now appears that there are numerous other uses for such a system of simplified circuits. In addition to the installations of strictly dispatcher control on the Ohio Central Lines of the New York Central, the Pere Marquette, and other roads, this equipment has been employed for the control of power switch machines and signals to govern train movements at the ends of double track, at passing tracks, yard entrances, etc., from a distant control point, which may be as much as several miles away.

On the Big Four manual block signals located at intermediate unattended sidings are now controlled from distant offices with indications returned to the control point to repeat the position of each signal, as well as the automatic OS. record of the passing of each train. All of these functions are being accomplished over one pair of wires on each of five installations. On the Burlington, a complete electric interlocking, involving the signals, derails and movable-point frogs of a crossing of two railroads, is controlled remotely by the use of the simplified circuit system. On the Boston & Maine, as well as on the Texas & Pacific, the centralized control apparatus is being used to direct train movements by signal indication in either direction on both tracks of double-track sections. The same equipment is being applied to sections of joint track over bridges, through tunnels, and at other places where movements must be expedited, and where the elimination of train orders reduces delays. It is evident, therefore, that by the use of this modern development in control the application of signal and interlocking facilities can now, in numerous cases, be extended economically to facilitate the movement of traffic.

Railways Reduce Accidents —Highways Increase Them

THE problem of reducing accidents on railway property always has been more one of protecting people for whose safety the railways have had little or no responsibility than of protecting those for whose safety they have been responsible, and the complete statistics of accidents in 1928 recently issued by the Interstate Commerce Commission show that this is more emphatically the case now than it ever was before.

The railways have no responsibility for the safety of those who trespass upon their property. They have only partial responsibility for the safety of those who cross their tracks at highway grade crossings. The number of persons killed on railway property in 1928, exclusive of trespassers and those crossing at grade crossings, apparently was the smallest since complete railway accident statistics have been compiled in this country. The total number killed on railway property was 6,509, or the smallest since 1897, excepting 1921 and 1922. The number killed exclusive of trespassers and persons crossing at grade crossings, however, was only 1,654, which was smaller than the number of comparable classes of persons killed in either 1921 or 1922. The number of employees killed last year was 1,243, and the number of passengers, 85. This was the smallest number of employees killed in any year for which there is any record, and the smallest number of passengers excepting in 1927.

A review of the changes that have occurred during the last twenty years in the classes of persons to whom fatal accidents have occurred on railway property shows the success the railways have had in reducing accidents to persons for whose safety they have been responsible. The total number killed in 1908 was 10,188, and of these 6,110 were killed while trespassing or crossing tracks, while 4,078—principally employees and passengers—were killed in other circumstances. In 1918 the total number killed was 9,286, of whom 4,316 were neither trespassing nor crossing tracks. In 1928 the total number killed, as already stated, was 6,509, of which only 1,654 met their deaths while neither trespassing nor crossing tracks.

Within the last ten years the total number of fatalities occurring on railway property was reduced about 30 per cent, but the number of fatalities which may, with any fairness, be attributed to conditions or practices within the control of railway managements and employees, was reduced 61 per cent. The proportion of the total number killed who were neither trespassing nor crossing tracks was reduced from 47 per cent to 25 per cent. In 1918 the number killed at highway crossings was 1,862, or 20 per cent of the total number killed on railway property. In 1928 the number killed at highway crossings was 2,568—the largest number in history—and was almost 40 per cent of the total number killed.

The failure to reduce all fatalities much more has been due principally to the increase in accidents at highway crossings, which, in turn, has been due to the

enormous increase in the use of motor vehicles. Obviously, the accidents at highway crossings are really highway accidents rather than railway accidents, and present a problem which must be solved more by public authorities and the public than by the railways.

There is an increasing demand for the elimination of highway grade crossings, and large amounts are being spent for this purpose by the public and the railways—mainly by the latter. And yet, the number of such crossings is still increasing. It increased 952, or from 235,331 to 236,283, in 1927, the last year for which the statistics are available. Of course, this was due to the opening of new roads and streets over railways by public authorities. How can the public consistently demand greater efforts by the railways to reduce accidents at grade crossings with highways, when it is allowing its officials constantly to increase the number of such crossings.

Government Officers' Waterway Methods

THE avowed purpose of the "experiment" with government ownership and operation of the barge line on the Mississippi river system under the name of the Inland Waterways Corporation is to determine the practicability of private ownership and operation of carriers on our inland waterways. The strongest advocates and defenders of the present policy of government operation concede that it should be only temporary—that when either the practicability or impracticability of successful operation has been demonstrated, the barge line should be turned over to private enterprise or abandoned. The charges made against government officers by Edward F. Goltra of St. Louis, in his proceeding against the Inland Waterways Corporation, (see *Railway Age*, March 30, pages 734 and 735) are a remarkable commentary upon this avowed policy.

Mr. Goltra entered into a contract in May, 1919, and a supplementary contract in 1921, with the chief of engineers of the United States Army to lease certain towboats and barges belonging to the government with an option to purchase them. About that time, however, the government engaged in transportation under the name of the Mississippi-Warrior Service, after which, according to Mr. Goltra, officials of the War department persistently interfered with, and finally nullified, his efforts to operate on the Mississippi river system by refusing to let him make rates similar to those made by the government's barge line, and by finally seizing the barges and tow-boats he had leased.

The respective legal rights of the government and Mr. Goltra must be settled by the courts. It seems to be indisputable, however, that Mr. Goltra did try to operate the boats, and was willing to buy them for operation as a private business enterprise, and that government officers prevented him from doing so. Why did they do so? Apparently because they apprehended that competition by him would interfere with the government's "experiment". But the government's "experiment", we have been told, is being made to determine the practicability of successful private management. Would not the practicability of successful private management have been more satisfactorily tested by actual private operation than by government operation? It looks very much as if the promoters of the government barge line were more anxious to get and keep the government in business than they were to demonstrate the practicability of successful private operation.

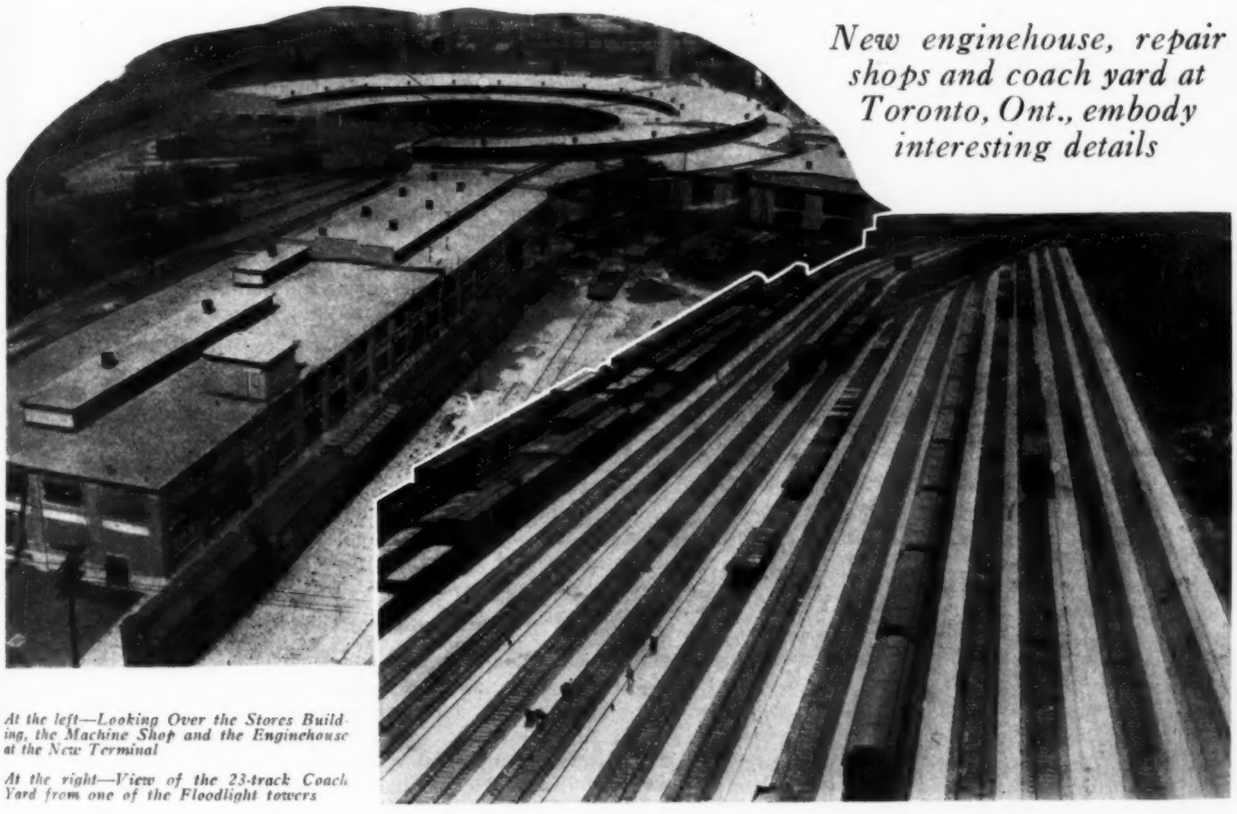
Other developments besides those affecting Mr. Goltra's plans indicate that not only some government officers, but not a few politicians and business men, are anxious to promote the development of inland waterways, and of government operation upon them, almost regardless of the economic consequences. The engineer who investigated the expediency of trying to make a navigable waterway of the Missouri river rendered an adverse report. Immediately politicians and business interests that had been advocating the improvement of the Missouri attacked the report with such effect that apparently it is to be disregarded. Another government engineer, Major C. L. Hall, has made two adverse reports regarding the proposed construction of a nine-foot channel in the upper Mississippi. His second report has not been made public, but there is reason to believe he estimated the cost would be $80,000,000, whereas those who had favored the project has estimated its cost at $30,000,000 to $40,000,000. Interested politicians and business men have now started a movement for appeal from Major Hall to higher authority in Washington.

The reports of the engineers who investigate waterway projects are made to the chief of engineers of the United States Army. A number of these reports have been made, but it is impossible to get copies of them because the War department states that, while they have been submitted, they have not been formally acted upon, and are therefore not public property. This discloses the existence of a somewhat remarkable situation. The War department has obvious reasons for keeping military information secret, but the question of the development of waterways is an economic one, and there is no good reason why the public should not be given access to all the information the War department or any other government department may have bearing upon it. Why, then, are not all reports of army engineers upon waterway projects promptly made public? The Interstate Commerce Commission has access to every scrap of information in railway offices, and can make all of it public that it desires to. Why should a government department be more secretive about economic information of interest and importance to the public than it allows the railways to be?

The nation is in the midst of a powerful agitation for the development of inland waterways, and for government operation of barges and boats upon them. The expenditure of billions of dollars would be required to carry out all the projects that are being advocated. Government officers should favor or oppose projects for the expenditure of public money entirely in accordance with their views as to whether the proposed expenditures will or will not be of public benefit, and they should give the public all of the information they have bearing on these projects. When the government engages in business its officers should be held up to the highest standards of fairness in competition and of frankness in dealing with the public, and they should be influenced by no consideration excepting the public interest. There is much evidence available indicating that some government officers who have been especially concerning themselves with the development of water transportation are more influenced by the desire to increase the government's activities in business than they are to make those activities conducive to the public welfare.

Canadian National Builds Modern Terminal Facilities

New enginehouse, repair shops and coach yard at Toronto, Ont., embody interesting details



At the left—Looking Over the Stores Building, the Machine Shop and the Enginehouse at the New Terminal

At the right—View of the 23-track Coach Yard from one of the Floodlight towers

RECENT years, and more particularly the last two or three, have witnessed many important improvements in railway facilities at Toronto, Ont. The more important of these include the new $6,000,000 union station, built by the Toronto Terminals Railway and described in the Dec. 24, 1927, issue of the *Railway Age;* track elevation and street grade crossing elimination along the entire waterfront of the city by both the Canadian National and the Canadian Pacific; the construction of a new engine terminal and car repair facilities by the Canadian National; and the construction of similar facilities, proposed by the Canadian Pacific.

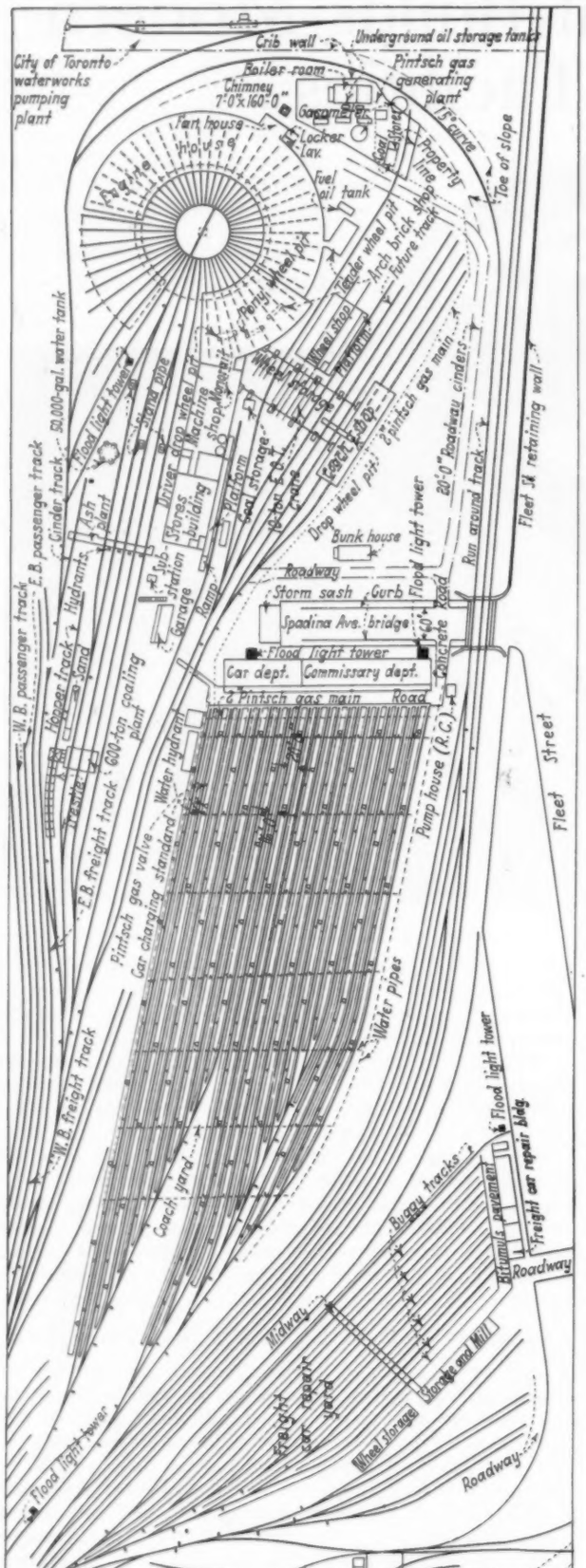
The new engine terminal and car department facilities of the Canadian National, which are the subject of this article, and also the Canadian Pacific's new facilities, were made necessary for two principal reasons; (1), the outgrowth of old facilities, and (2), track elevation, which involves the raising of the main tracks of both roads about 20 ft. directly opposite the new station, and to a slightly less extent for a distance of about 2½ miles east of the station. West of the station the new grade of the elevated tracks runs out at a distance of about one mile.

The Canadian National selected a site for its terminal on filled-in land about 3,000 ft. directly west of the station, where there was comparatively light grading, with relatively easy grades in reaching the main line tracks. The new terminal lies immediately south of the west end of the elevated main line tracks, between these tracks and two other elevated tracks which swing around the south side of the terminal site. These latter tracks were constructed recently as through freight mains in order to eliminate the movement of through freight trains through the terminal facilities.

Thus, the Canadian National terminal, located between the passenger station mains and the through freight mains, occupies an unobstructed area approximately 3,000 ft. long by 800 ft. wide at its widest point. The only street crossing the terminal is the overhead crossing of Spadina avenue, at about the center of the area. The bridge forming this crossing is a through girder structure about 800 ft. in length, resting on concrete piers, and since it was designed and built with the engine terminal in mind, it offers practically no obstruction to the terminal operation.

Engine and Car Facilities Are New Throughout

In general, the new engine and car facilities of the Canadian National at Toronto may be said to be among the most modern and complete of their kind in the Dominion. The principal new engine facilities consist of a 36-stall brick and frame enginehouse, a 160-ft. by 80-ft. fireproof machine shop, and a 600-ton reinforced concrete coaling station with sanding facilities, in addition to ash handling and water service facilities, and locomotive washing platforms. The principal car department facilities consist of a 300-car capacity coach yard, separate passenger and freight car repair yards and repair shops, a joint passenger and freight car wheel shop, a commissary and car department supply building, and a



Map of the New Car and Locomotive Facilities

storage and mill building. In addition to these facilities, the new layout includes a two-story brick and reinforced concrete storehouse building, a two-story brick bunk house, a small ice house and a six-car garage. Practically all of these facilities are connected by concrete trucking driveways.

In the general arrangement of the terminal, which lies in an easterly-westerly direction, the engine facilities are located toward the east end, or east of the Spadina Avenue bridge, while the car department facilities, including the coach yard, lie west of the bridge. The important exception to this general arrangement is that the coach repair unit of the passenger car facilities is located in the east half of the area, south of the engine terminal, this being done because of the larger space available in this territory.

Owing to the location of the terminal between elevated tracks on each side, all of the main leads to the terminal extend from the west end where advantage is taken of the lesser elevation of the raised main tracks. The main leads to the enginehouse are five in number, two inbound and three outbound, all of which are served by the coaling station and the ash handling plant. Three other leads also serve the house and have short connections with the eastbound main tracks through a special turnaround track, which loops around the back or east end of the enginehouse from one side of the terminal to the other. This special track makes it possible to turn entire passenger trains before entering or after leaving the coach yard.

Enginehouse Has Modern Equipment

The enginehouse, which is the most important unit at the terminal, is designed to handle an average of 100 locomotives daily and as many as 130 during the seasons of peak traffic. It is a 36-stall structure with brick exterior walls and a concrete foundation, supported on concrete piles. The use of concrete piles for supporting the enginehouse and other large structures was particularly effective at the new terminal since ledge rock lies from about 20 to 24 ft. below the level of the engine tracks, while the lake level is about 10 ft. above the rock.

The interior framing of the house is of mill construction, and the roof is of the central monitor type, covered with tar and gravel roofing. The floor of the house throughout is of concrete, six inches thick, consisting of a four-inch base course of 1-3-5 concrete, and a two-inch wearing course of 1-2-3 concrete. The sash throughout are of wood and extend around the entire outer circle of the house, as well as around both faces of the roof monitor. The ventilating sash in both the outer ring wall and the monitor are of the center-hung type. The doors of the house are of a new design with a structural steel frame, the outside members of which are small four-inch I-beams with welded joints. This four-inch thickness provides for double sheathing with air space between, and at the same time is sufficiently stiff to resist warping. The doors are relatively light and the hinges are provided with adjustable pins, which assures proper swinging. In addition to the house as laid out, provision is made for adding nine additional stalls when conditions require.

Of the 36 stalls in the house at present, eight are 130 ft. long and the remainder are 110 ft. long. The longest stalls are grouped together to form a shop section at one end of the house, and within this section, two of the tracks are equipped with driver drop pit, two with an engine truck wheel drop pit, and two with a tender wheel drop pit. All of these pits are equipped with electro-pneumatic hoisting jacks. The other two stalls in this

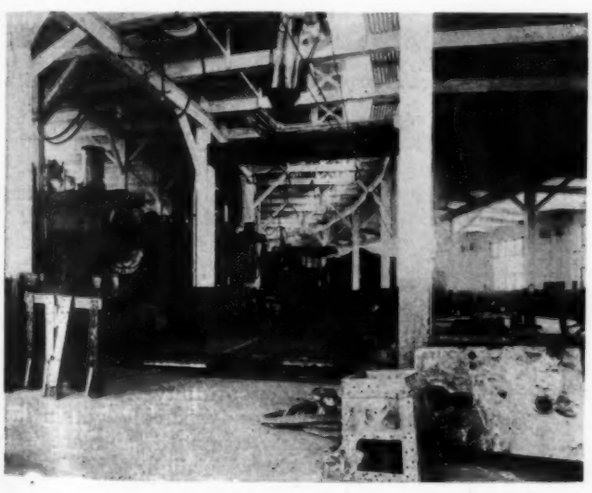
section, as well as all of the other house tracks, are equipped with the usual type of inspection pits. These latter pits are of concrete construction with a heavy plank jacking floor on each side. They are 86 ft. 9 in. long and vary in depth from 3 ft. at the inner end, to 2 ft. 6 in. at the outer end. The pits in the longer stalls have a length of 96 ft. 9 in. All of the pits are drained by collecting wells at the inner ends, joined together by a 12-in. drain. According to the usual practice of the road, window openings, with wooden wainscoting below, are located in the outer ring wall of the house, directly opposite the end of each stall. These openings are the same size as the entrance doors, so that an engine overrunning a pit can pass through the outer wall without serious damage.

In order to facilitate the removal of engine springs, 10 of the pit tracks are equipped with Cardwell spring sections. These consist of manganese castings from which an insert may be taken from the top of the rail, permitting engine wheels to be dropped sufficiently to allow the removal of the engine springs. The inserts are about 3 ft. long, and are installed in the tracks to suit various types of engines and wheel spacings.

Service piping throughout the house consists of washout, blow-down and refilling lines carried overhead with drops extending between each stall. All of the lines in this system are of leadized pipe to afford protection against the action of acid-bearing gases. In addition, each stall is served by compressed air drops for the operation of power tools, and by electric circuit plugs for power and extension cord lighting. Welding plugs are also provided at intervals throughout the house for convenience in welding operations. As already intimated, the house is served by a boiler washing system, this consisting principally of two large tanks into which blow-down water from the boilers is purified and made suitable in a reheated condition for refilling purposes.

Special Induced Draft Smoke Exhaust System

One of the features of the enginehouse is the modern heating and ventilating system installed. Heating is by the indirect system, and the steam supply is secured from the city water works pumping plant located immediately



Interior of the Enginehouse, Showing Type of Construction

east of the terminal. The steam is received at a small brick and concrete fan house, integral with the outer ring wall of the enginehouse, near the center, and passes through heating coils located in front of two large blower fans. These fans, which are at the floor level, force clean fresh air through the coils and the heated air passes through two large underground concrete ducts which connect with a duct of similar construction, extending around the entire inner ring of the house. From this latter duct, a lateral sub-surface duct extends along each side of each pit, each lateral having three outlets into the pits. An exhaust fan at a high level in the fan room assists in securing the proper circulation of air throughout the house.

In the place of ordinary smoke jacks for carrying off the smoke and gases of locomotives, the house is

The Coach Shop and the 10-Ton Crane Which Serves the Wheel Drop Pits

equipped with a special induced draft smoke exhaust system. In this system each stall is equipped with a vertical cylindrical jack which has a fairly air-tight connection with the stack of an engine, and which has an outlet at the top into a Transite-lined, frame exhaust duct, about 4 ft. by 5½ ft., which extends around the full length of the house. This duct connects with an outlet to the fan house, where, on the second floor, exhaust fans force the gases up a 165-ft. radial brick chimney, with a 7½-ft. inside diameter.

The jacks themselves, which have damper control, are of special construction and made of aluminum to reduce their weight and to enable them to resist corrosion due to engine gases. By means of a single universal joint at the top of each jack, just below the collecting duct, the jack adjusts itself to any position of a locomotive within a range of five feet. A tight connection between the jack and locomotive stacks is obtained without a movable joint by means of a spherical bowl.

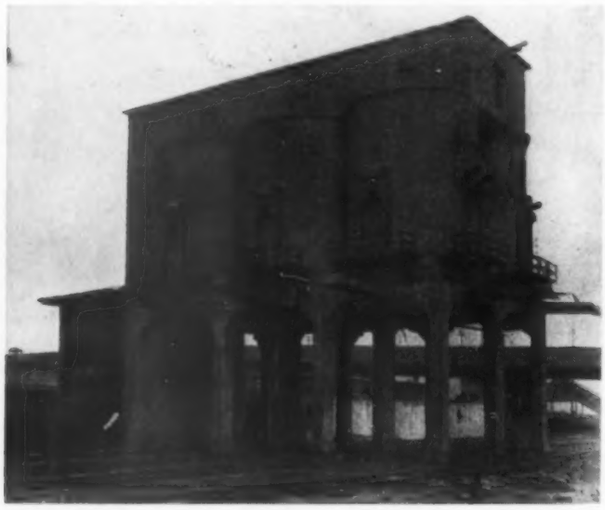
The vertical motion required in the jack to apply and remove it from a locomotive and to adapt it to the varying heights of stacks, is obtained by a telescoping joint between an upper and lower section in the jack. The operation of this joint is effected by means of two supporting ropes which carry counterweights to reduce the manual effort required. The equal movement of these ropes moves the jack up and down, while the unequal movement of them swings the jack backward or forward to adjust it to the position of the locomotive.

Supplementing this smoke exhaust system, roof ventilators are provided above each house track, alternately at the front and rear of the roof monitor. Also, center-hung ventilating sash extend continuously around each face of the monitor, which are opened and closed manually from overhead platforms adjacent to both faces of the monitor and continuous around the house. An additional overhead platform near the outer face of the monitor gives access to all of the overhead service piping, and also to the smoke exhaust duct.

Artificial lighting of the house is accomplished principally by floodlights with 200 or 300 watt lamps, two such lights being mounted overhead on each ring wall directly in line with the working space between each pair of stalls. Thus, opposing lights from opposite ends brightly illuminate all of the working space in the house,

with little evidence of shadows. Each floodlight is controlled separately by a switch located on the wall directly beneath it. This method of lighting is supplemented by the usual type of overhead reflector lights at critical points in the house, and also by the provision of post and wall plugs for extension lights.

Special equipment and facilities at the house, other than that already mentioned, consist of an eight-ton mono-rail crane serving the locomotive driver drop pits and extending into the machine shop, power grinders for



The 600-ton Coaling Station Serves Four Tracks

each section of the house, and drinking fountains at convenient intervals. Locker and toilet facilities for the enginehouse employees are afforded in a separate room at one end of the fan house. Another auxiliary to the house is an arch brick and castings stores annex, joined to the rear of the house near the center. This annex, which is of the same type of construction as the house proper, is about 65 ft. long by 30 ft. wide. The house is served by a 100-ft. twin-span turntable, electrically operated by two 30-hp. motors.

The machine shop at the new terminal is a steel frame, brick wall structure with a concrete foundation, supported on concrete piles. This unit, which is one story high, is 160 ft. long by 80 ft. wide, and is laid out parallel with the enginehouse lead tracks and joined at one end to the longer section of the enginehouse. The only obstructions within the machine shop are two longitudinal rows of steel columns, spaced 40 ft. center to center, which support the roof trusses. The roof of the shop, which is of the high-low type, is of laminated board construction, covered with tar and gravel roofing. The floor of the shop consists of a 6-in. concrete base with a 1½-in. asphalt mastic wearing surface.

One of the noticeable features about the shop is the adequate daylighting provided, large areas of wood sash having been arranged in both sides of the building proper and in both sides of the monitor-like roof. In both the side walls and the roof, sections of center-hung sash have been provided to assist in ventilation, particularly during the summer months. The main ventilating system in the shop is combined with the heating system and consists of three unit heaters of the blower type, mounted overhead and directing their flow of air on an inclined plane toward the floor. In the summer, when steam to the heater coils is shut off, the units can be used alone for a forced ventilation system. Supplementing these methods of keeping a fresh air supply in the shop, eight ventilators are located in the roof.

The shop is thoroughly equipped with modern tools and machinery for conducting all classes of engine running repairs. All of this equipment is operated by electric motors, either direct-connected or belt driven through shafting. Hoisting equipment within the shop consists of an eight-ton traveling crane supported on an overhead mono-rail, and a storage battery electric floor crane of 3,000 lb. capacity.

In addition to the shop tools and equipment, the shop building also houses the air compressors employed at the terminal, and the pumps and tanks of the boiler washing system employed in the enginehouse. Provision is also made in the shop for adequate toilet, wash and locker room facilities.

Storehouse Adjoins Machine Shop

The storehouse, which is another of the more important buildings at the terminal, adjoins the machine shop on the end opposite the enginehouse. This unit is a brick and reinforced concrete structure, about 174 ft. long by 80 ft. wide, having two stories and a basement. All of the floors in the building are of reinforced concrete flat slab construction, resting on concrete columns, the first floor being 9½ in. thick and the second floor 7½ in. thick. The roof of the building is of the flat type, with a monitor extending over the storeroom end, and, like the floors, is of flat slab construction. The south side of the building throughout its length is provided with a 10-ft. concrete platform, with ramps at each end, and facing on a storehouse track.

In general, the main floor of the building is occupied by a large storeroom, a small stores department office,

View of the Commissary Building Just Before Completion

an engineman's equipment room, and two lavatories and wash rooms. The second floor, which is joined to the first floor and the basement by two stairways, a two-ton elevator and a hand-operated dumbwaiter, is divided into a large store room, a general store department office, an engine crew book-in office, a locomotive foreman's private office, a locomotive department general office, and a large lunch room. The locomotive foreman's office is so situated that he can see the enginehouse leads from his outside windows, and through a special window in the shop wall, he has a view over the entire machine shop. This affords an unusually good opportunity for intensive supervision. All of the bins and shelving within the storehouse are of steel, neatly arranged, and are well lighted by both daylight and artificial light.

The basement of the building is used primarily for the storage of the heavier classes of material and supplies, but also houses a number of oil storage tanks which supply pumps located on the first floor. The main oil supply at the terminal is, however, stored in a 5,000 gal. steel tank directly south of the storehouse. The entire building is heated by direct steam from the city water works plant, by means of radiators along the walls.

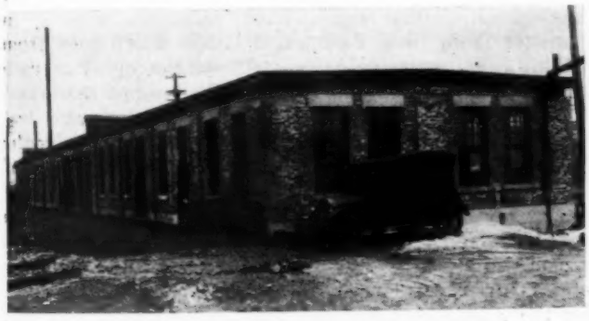
The coaling plant at the terminal is a 600-ton reinforced concrete structure, consisting of six separate 100-ton cylindrical bins placed in two groups of three each, back to back. The plant is located about 700 ft. west of the enginehouse and spans three of the house lead tracks, delivering coal however, to all four of the enginehouse leads at that point.

Coal, Sand and Ash Handling Facilities

In the operation of the plant, coal is delivered over a coal track on the north side of the plant, to a steel track hopper, from which it passes over an apron to a boot at the foot of a hoisting tower. From the boot the coal is elevated to the top of the plant by a chain bucket conveyor which consists of 124 buckets of 70-lb. capacity each. From the top of the hoisting shaft, the coal is carried over the bins through a concrete and brick head house, and is discharged into the desired bins by means of trips. Operation of the plant is by electricity, all of the hoisting equipment being housed in the head house over the bins. The hoisting capacity of the coaling station is approximately 70 tons per hour, and the actual coal demand at the station is about 500 tons daily.

The sanding facilities in connection with the station include a concrete ground storage wet sand house where drying is effected by a Grand Trunk sand dryer, and two dry sand bins located at the top of the coaling station, one of 100-tons capacity, and the other of 50-tons capacity. Elevation of the dry sand is by air at about 90 lb. pressure, and delivery to locomotives is entirely by gravity. The sand drying capacity of the facilities is between 10 and 15 tons per day.

The ash handling facilities are located about midway between the enginehouse and the coaling station, and consist of a single installation continuous under the five principal house leads. Briefly, the ash handling plant consists of a concrete pit extending at right angles under the tracks, with cast iron receiving hoppers covered by gratings, directly under each track. For collecting and conveying the cinders from the hoppers, a continuous chain link conveyor with carrying pans linked together at about one-foot centers, operates through the pit, carrying the cinders up an incline of about 45 deg. to a head house at the north end of the installation, and dumping them directly into cars on a special cinder car track. The carrying pans of the conveyor are of heavy cast iron construction so as to resist the wear and corrosive effect of the acids in the cinder quenching water, and each individual unit of the conveyor is carried on small wheels which run on a track of light-section rail, in the bottom of the pit. Cinders are quenched by sprinkling with a hose and by the wash water flowing from the ash pans, openings in the carrying pans permitting the water to drain from the cinders before they are dumped into cars. The operation of the conveyor is by electricity, the motor, gears, and other operating equipment being housed in the head house over the cinder car track. Water at the terminal is supplied by means of three standpipes, which serve six tracks, including the five enginehouse leads. These standpipes are supplied with water from a 150,000-gal. storage tank located nearby. The water used in this connection is generally pumped to the tank from Toronto bay, by the railway pumping plant, but, in emergency it can be supplied from the city water system.



The Freight Car Repair Building

Constructing the Spadina Avenue Subway for the Through Freight Tracks South of the Terminal

In laying out the passenger car and freight car repair facilities at the terminal, the former were located immediately southwest of the enginehouse, and the latter several hundred feet away at a point along the south side of the terminal near the west end.

The passenger car repair facilities consist essentially of a passenger car repair shop and a wheel shop with a suitable arrangement of tracks served by a 10-ton overhead traveling crane. The repair shop is a steel frame, brick structure, 202 ft. long by 46 ft. wide, with a concrete floor, wood sash, and a board roof, covered with tar and gravel roofing. The shop is served by two longitudinal tracks, one of which is equipped with a wheel drop pit, the pit also serving two additional tracks outside of the shop.

The wheel shop, while located with the passenger car facilities, is used for repairing both passenger and freight car wheels. This building is 133 ft. long by 62 ft. wide, and is of the same type of construction as the passenger car shop. Two tracks, stubbed at each end, serve this building, and are used solely for the handling and storage of wheels. The equipment within the shop is sufficient to make all classes of wheel repairs. The overhead traveling crane serving the shop has a capacity of 10 tons, and extends across the front end of the building and over to the side of the coach repair shop, serving the wheel storage tracks and the wheel drop pit.

The freight car repair facilities at the terminal consist principally of a car repair building, a storage and mill building, and an 11-track car repair yard with buggy or dolly tracks between alternate repair tracks. The car repair building is a one-story brick and concrete structure, 200 ft. by 40 ft., with a concrete floor and a built-up asphalt and asbestos-covered timber roof. This unit, which is located adjacent to the stub end of the repair yard, is divided into separate sections, providing space for a foreman's office, a blacksmith's shop, an air brake shop, painter's, pipe fitter's, and tinsmith's shops, and also for a lunch room and toilet facilities.

The storage and mill building is a frame structure 200 ft. long by 40 ft. wide, divided into three principal sec-

tions; a lumber mill, which is equipped with appropriate machinery; a timber storage section; and a section used for the storage of oil and freight car repair parts. To the west of this building provision has been made for the storage of freight car wheels.

Platforms and Service Lines in Coach Yard

One of the most complete and modern units of the facilities at the terminal is the large coach yard and the well planned and laid out car department and commissary building provided. The coach yard, which lies in a general easterly and westerly direction in the west half of the terminal, consists of 23 tracks, stubbed at the east end and with outlets over several leads at the west end. Within this yard, which has a capacity for 256 coaches, the tracks are spaced alternately on 16-ft. and 20-ft. track centers, the smaller track centers accommodating 5-ft. platforms and the wider centers, 10-ft. platforms. All of these platforms are of concrete construction, which greatly facilitates the work in the yard, and materially improves its appearance.

All of the service lines in the yard are located along the sides of the wide platforms, these consisting of water lines, car charging lines and Pintsch gas lines. Water hydrants and car charging standards in these lines are located about 150 ft. apart, and Pintsch gas valves are located at intervals of about 90 ft. Electric power lines also serve the platforms, with outlets at intervals for plugging in such equipment as vacuum cleaners. These are located in a pipe trench near one edge of the wider platforms, the trench being covered by sectional steel cover plates. Washing of the coaches is done at any point in the yard, and it was to make this possible that the narrower platforms were provided. These platforms also serve for transporting batteries to and from cars.

The most important auxiliary to the coach yard is the car department and commissary building, which is located about 30 ft. beyond the stub end of the yard and at right angles to the yard tracks, the space between being occupied by a concrete driveway. This building, which has two stories, is a brick and concrete structure about 386 ft. long by 50 ft. wide. The roof of the building is of frame construction with a built-up asbestos roof covering, the window sash are of wood, and the floors throughout are of concrete with the exception of that in a section set aside for a battery room, which consists of wood blocks on a concrete base.

In the division of space in the building, the commissary department occupies 241 ft. at the south end, and the car repair department the remaining 145 ft. at the north end. The completeness of the arrangement of the building is evidenced by the number and character of the facilities which it provides. In the commissary department section, the first floor is divided into two main sections by a fire wall, one of these having nine rooms of various sizes for Pullman supplies, clean and soiled linen, and for uniform pressing and repairing, while the other section is occupied mainly by a large storeroom, surrounded on three sides by smaller compartments. These compartments include offices for an agent and his staff, inspectors, a storekeeper, and a public vestibule, in addition to separate rooms for the handling of fresh meats, fish, butter and cheese, and fruit and vegetables. Space is also provided near the latter rooms for a complete refrigeration outfit. Half of the second floor of the commissary department section is used solely for equipment stores, while the other half is divided into two lounging rooms, 16 bedrooms, two lavatories and space for the storage of new linen.

The first floor of the car repair department section houses a battery room, an electric shop, a switchboard and generator room, a petty stores room, and individual shops for pipe fitters, carpenters and painters. The second floor is laid out principally for a large general office, a car foreman's office, a large lunch room seating 138, with kitchen, locker room, and lavatories.

In spite of the fact that practically all of the buildings and other structures at the terminal are of fireproof construction, the entire terminal area is served by water mains with hydrants at important points. The terminal is also served with both storm and sanitary sewers.

To facilitate operation within the terminal at night, a system of floodlights has been installed. This system includes five steel towers, 120 ft. in height, located at strategic points, and equipped with from four to seven floodlights. These lights have reflectors varying in diameter from 14 to 23 in., and lamps which vary from 780 to 1,000 watts capacity. All of the lights at each tower are controlled by a switch at the base of the tower.

All of the work on the Canadian National's new terminal at Toronto was planned and carried out under the general supervision of C. B. Brown, chief engineer of operation. The actual work was done under the direct supervision of S. B. Wass, terminal engineer, to whom we are indebted for many of the details included in this article. Mr. Wass was represented on the ground by H. L. Currie, resident engineer. The general contractors for the engine terminal facilities were Anglin-Norcross, Ltd., and for the car department facilities, the Atlas Construction Company.

* * * *

On the Boston & Maine

Congressional Rate-Making Opposed

Railroad committee of U. S. Chamber of Commerce reports on Hoch-Smith resolution

A RESOLUTION regarding it as unwise and contrary to sound public policy for Congress either to fix rates itself or to give to the Interstate Commerce Commission detailed instructions as to the way in which the commission shall apply the rate-making principles defined in the law is proposed by the Committee on Railroads of the Chamber of Commerce of the United States for submission to the seventieth annual meeting of the chamber, to be held in Washington April 29 to May 3.

Reporting on the subject of the Hoch-Smith resolution, the committee, of which C. W. Lonsdale, of Kansas City, is chairman, said that if the resolution should be construed as Congressional rate-making, and, therefore, contrary to the principles set forth in its report, it would recommend that it be repealed, but in the report and accompanying resolution it outlines the most important questions involved in the resolution and states the principles which, in its opinion, apply in their solution.

After stating that representatives of the agricultural industry have expressed to the committee the view that in supporting the Hoch-Smith resolution agriculture does not ask or desire preferential or discriminatory treatment, but only desires that in view of the disparities brought about by war conditions and the horizontal increases in rates, there shall be special examination of the rates affecting agriculture so that any disparities may be promptly corrected, the committee expresses the belief that this should be the interpretation of the spirit and purpose of the resolution.

The text of the resolution proposed follows:

Resolutions Proposed by Committee

The power given to Congress in the Constitution to regulate interstate commerce includes the power to regulate railway rates. Congress can either exercise the rate-making power directly or delegate it to the Interstate Commerce Commission, or some other agency to exercise. The power of Congress could, of course, be used to abolish the Interstate Commerce Commission, if Congress deemed this desirable.

We believe, however, that Congress acted with wisdom and statesmanship when it created the Interstate Commerce Commission and delegated to it, as an impartial and expert body which would be informed by investigation, study and experience, the function and duty of regulating railway rates.

Congress having created such a body for such a purpose, and having defined in the Interstate Commerce Act the broad principles that shall be applied by the commission in using its power of rate-making, we regard it as unwise and contrary to sound public policy for Congress either to fix rates itself or to give to the commission detailed instructions as to the way in which the commission shall apply the rate-making principles defined in the law. The commission should be permitted to continue to regulate rates in accordance with its own expert knowledge and judgment as to the way in which the rate-making principles defined in the law should be applied in each particular case, and as to the relations that should be established between the rates paid by different sections of the country and different branches of industry and commerce.

WASHINGTON, D. C.

It is a long established principle of rate-making that consideration should be given to the condition of the various industries so that rates may be fair and not discriminatory and that goods may move freely in commerce. Reasonable stability in the rate structure is, however, of great importance. Constant change and uncertainty damage business and retard development to the detriment of the national welfare. We believe, therefore, that in the readjustment of rates conditions inherent in the several industries and branches of commerce should be considered, and that the rate-making authority should not attempt to relieve temporary depressions.

We believe that the Interstate Commerce Commission should ascertain what inequalities or discriminations exist in rates, and issue such orders as may be necessary to remedy such inequalities and discriminations. We believe that such investigations as have already been begun under the Hoch-Smith resolution should be completed, leaving the commission free to make such further investigations as they may find necessary in fixing just rates.

We believe that special consideration should be given to freight rates upon the products of agriculture in order that agriculture may be given the benefit of any readjustments favorable to it which the commission may decide should be made.

We are strongly of the opinion, however, that the purpose of any general readjustment of rates that may be made, and of all regulation of rates, should be to distribute transportation costs equitably between all industries and territories and to assure the provision of adequate transportation, and that in no other way can the government's power of rate regulation be so exercised as to promote the national welfare.

In the report the committee says in part:

Different Interpretations of the Resolution

"Various organizations, official and unofficial, that are affected by this resolution, have placed different interpretations upon its provisions.

"Some say that it is Congressional rate-making, that it sets aside important provisions of the previous law and directs the commission to discriminate in favor of agriculture and other distressed industries; and that it requires the commission to conduct an investigation that is so comprehensive that it is beyond the power of any human agency to bring it to a successful conclusion.

"Others insist that it is not Congressional rate-making, since it repeatedly reaffirms the present statutory powers of the commission; that it upholds those provisions of the present law which forbid discrimination; and that it does not make the task of the commission any more difficult or more comprehensive than it was before, but merely places new emphasis on the importance of so readjusting the freight rate structure that each locality, each commodity and each industry, including agriculture, will bear its fair share of the transportation cost.

Congressional Rate-Making

"Under the Constitution Congress undoubtedly has full authority to regulate railroad rates; but for obvious reasons it is not possible for Congress itself to carry on the actual work of regulation. It is not a technical body; it has many other duties to perform. Therefore

in 1887 Congress created the Interstate Commerce Commission to serve as its administrative arm in the actual work of regulation.

"In recent years, there have been various efforts by different groups to induce Congress to act for itself in matters which were previously left to the commission; for example, to make the Pullman surcharge unlawful and to direct the Interstate Commerce Commission to reduce rates on the transportation of grain. These are commonly referred to as efforts for Congressional rate-making which, if successful, would threaten the independence of the commission.

"Opponents of the Hoch-Smith resolution hold, among other things, that it is an example of Congressional rate-making.

"Supporters of the resolution say that it is merely a Congressional direction to the commission to make certain investigations; that Congress expressly confirmed the rate-making powers of the Commission when it used in the first paragraph of the resolution the expression insofar as it is *legally* possible to do so, and in the second paragraph *in accordance with law,* and in the third paragraph such *lawful* changes and at the lowest possible *lawful* rates; and that the evidence is conclusive that in this resolution Congress did not change the commission's statutory powers of rate-making.

Purpose of the Resolution

"The interstate commerce act provides that it shall be unlawful for any common carrier to give undue preference to any particular person or corporation, or locality, or to any particular description of traffic. The act says that such preference constitutes undue discrimination.

"Opponents say that the Hoch-Smith resolution directs the commission to discriminate unduly in favor of depressed industries including agriculture.

"Supporters say that although the framers of the resolution desired to help the farmer to secure a reduction in his freight rates, they did not intend to direct the commission to give him any undue preference. On the contrary they wanted the commission to make a careful investigation of the entire rate situation, and, if the farmer is fairly entitled to a reduction in rates, to give it to him promptly.

"Representatives of the agricultural industry have expressed to your committee the view that in supporting the Hoch-Smith resolution agriculture does not ask or desire preferential or discriminatory treatment, but only desires that in view of the disparities brought about by war conditions and the horizontal increases in rates, there shall be special examination of the rates affecting agriculture so that any disparities may be promptly corrected.

"Your committee believes that this should be the interpretation of the spirit and purpose of the Hoch-Smith resolution.

Preference to Distressed Industries

"It has been held by some that the provision of the Hoch-Smith resolution directing the Interstate Commerce Commission to take into consideration 'the conditions which at any given time prevail in our several industries' introduces a new and unsound principle of rate-making and virtually makes of the commission a special Providence that must be prepared at all times to aid distressed industries by reducing their freight rates.

"Others hold that this was not the intent of the resolution.

"The question involved has, among other issues, been brought up in the California Fruit Case, frequently referred to as the Hoch-Smith Challenge Case. In that case the commission reduced the rate on trans-continental shipments of deciduous fruits from California to certain eastern points. The commission said in its report: The economic situation of the deciduous fruit industry is such that it clearly comes within the terms of the Hoch-Smith resolution as entitled to the lowest possible lawful rates compatible with the maintenance of adequate transportation service.

"The railroads applied to the circuit court of lower California for an injunction forbidding the commission to enforce its order in this case. The court denied the application saying that the commission was authorized to reduce rates upon the products of agriculture before completing the thorough investigation—directed by the joint resolution * * * and did not otherwise misconstrue the terms of that resolution.

"The railroads then appealed to the Supreme Court of the United States on the ground that the commission in entering the order had misconstrued the resolution which in the opinion of the railroads, does not direct the commission to reduce a rate on an agricultural product when the existing rate is reasonable and otherwise lawful.

"The Hoch-Smith Challenge case was argued before the Supreme Court on February 25, 1929, and it is hoped that the decision of the court in this case will determine what is the proper interpretation of the Hoch-Smith resolution.

"Your committee believes that it is a correct rate-making principle that the Interstate Commerce Commission should consider the inherent conditions of each industry and its products so that rates thereon will be fair and non-discriminatory, taking into account the value of the commodities and other long established factors of rate making. Each class or group of products should bear its fair share of the cost of maintaining the country's transportation system. Any inequalities or discrimination existing should be removed as promptly as practicable and further adjustments should be made in the future in accordance with the same principles. We believe, however, that the provision of the Hoch-Smith resolution that the commission is to consider the conditions which prevail in our several industries *at any given time,* if interpreted to call for continual readjustment of rates conforming to the fluctuating and temporary conditions of relative prosperity or depression in various industries would constitute an impracticable requirement. If the application of such a requirement were attempted it would produce constant changes and uncertainty that would far offset any advantage to be gained.

Readjustment of Freight Rates

"If the Supreme Court should affirm the interpretation of the Interstate Commerce Commission in the California Fruit Case as to the provision of the Hoch-Smith resolution requiring consideration of the condition of each industry, we believe that provision of the resolution should be rescinded. If on the other hand, the court finds that interpretation incorrect, the commission will be free to take into account the conditions of an industry over sufficiently long periods to give that degree of stability to the rate structure which is necessary in the public interest.

"The Interstate Commerce Act authorizes the commission, after full public hearing, to determine what

rates will be just and reasonable and non-discriminatory and adequate, and to fix those as the legal rates that may be charged by the railroads. With a view to accomplishing this purpose the commission has in the past heard many cases each year on the formal docket, and conducted special investigations in all parts of the country either on its own initiative or upon formal complaint. In 1924, for example, the year before the passage of the Hoch-Smith resolution, the Commission conducted 1,479 hearings, took 288,244 pages of testimony, and disposed of 1,316 formal cases, including a number of special investigations. Under the provisions of the Hoch-Smith resolution the commission has combined a considerable number of related cases into a single 'part' of the general Rate Structure Investigation, with a view to avoiding fragmentary, conflicting decisions, and readjusting the entire freight rate structure from a national viewpoint. In 1928 the commission conducted numerous important investigations, including the Rate Structure Investigation, the Eastern Class Rate Investigation and others, held 1,415 hearings, took 319,557 pages of testimony, and disposed of 1,900 formal cases.

Claim Resolution Is Impossible

"Opponents say that the Hoch-Smith resolution has frozen the rate structure; that it has laid upon the commission an impossible task; and that no single group of men can possibly deal with the freight rate structure successfully in the sweeping manner called for by the resolution.

"Supporters of the resolution point out that the commission is free to outline its own plan for the Rate Structure Investigation; that it always has been charged with responsibility for investigating the rate structure and readjusting rates when necessary; that with adequate appropriations the commission can carry out this policy without interfering unduly with the settlement of urgent rate cases that should be decided as promptly as possible; and that it is in the public interest for the Hoch-Smith resolution to direct the attention of the commission, as it does, to the necessity for giving due regard to a national and proper development of the country as a whole, and to the maintenance of an adequate system of transportation.

"Your committee believes that there should be as prompt revision of rates as practicable to remove existing disparities, but that the minute inquiry undertaken by the commission under the Hoch-Smith resolution is demanding so much time and labor as to make it questionable whether the magnitude and extent of the work will not actually delay the result sought. We believe, however, that the hearings already held by the commission under the provisions of this resolution have resulted in assembling information of great value, and that at least a part of the Rate Structure Investigation may be brought to a successful conclusion."

The Committee on Railroads consists of:

C. W. Lonsdale, Kansas City, Mo., chairman; A. R. Currie, Seattle, Wash.; Pierpont V. Davis, New York City; William J. Dean, St. Paul, Minn.; F. C. Dillard, Sherman, Tex.; Samuel O. Dunn, Chicago, Ill.; Edward J. Frost, Boston, Mass.; R. C. Fulbright, Houston, Tex.; A. L. Humphrey, Pittsburgh, Pa.; Emory R. Johnson, Philadelphia, Pa.; J. F. Reed, St. Paul, Minn.; William P. Sidley, Chicago, Ill.; R. S. Stubbs, New York City; Ezra J. Warner, Chicago, Ill.

Questions pertaining to the Hoch-Smith resolution are to be discussed at one of the round-table sessions at the annual meeting.

Hoover Averts Big Four Strike on Texas & Pacific

PRESIDENT Hoover on March 29 issued a proclamation creating an emergency board, under the Railway Labor Act, to settle the dispute between the Texas & Pacific and members of the four train service brotherhoods growing out of the removal of locomotive terminals from Longview, Tex., to Mineola and from Marshall, Tex., to Shreveport, La. By this action, President Hoover averted a strike which had been called by the brotherhoods, on the authority of a favorable strike vote, for 6 o'clock on the morning of March 30.

The members of the emergency board, who were announced at the White House on April 1, are: James R. Garfield, Cleveland, Ohio, former Secretary of the Interior; Chester H. Rowell, Berkeley, Cal., former member of the United States Shipping Board and the Railroad Commission of California; Walter C. Clephane, Washington, D. C., professor of law at Georgetown University; William Rogers Clay, Frankfort, Ky., judge of the Court of Appeals of Kentucky, and F. H. Kreismann, St. Louis, Mo. former mayor of that city. Mr. Garfield and Mr. Rowell served on the emergency board which settled the dispute between western railroads and the Order of Railway Conductors and the Brotherhood of Railroad Trainmen in October and November 1928.

Under the provisions of the Railway Labor Act the board must report its findings to the President within 30 days, on April 30, and no change must be made in the status of the controversy for another 30 days, or until May 30. In his proclamation, President Hoover stated that the emergency board had been created because the dispute had reached the point where it "threatens substantially to interrupt interstate commerce within the states of Louisiana, Texas and Arkansas to a degree such as to deprive that section of the country of essential transportation service".

The controversy was precipitated on September 11, 1928, when, following a conference between J. A. Somerville, vice-president, H. D. Earl, general manager, and W. H. Tobin, assistant general manager, of the T. & P. and the general chairmen of the Brotherhood of Locomotive Engineers, the Brotherhood of Locomotive Firemen and Enginemen, the Order of Railway Conductors and the Brotherhood of Trainmen, the organizations protested against the proposed rearrangement of locomotive terminals. They asked that employees affected be reimbursed for any loss or depreciation in the value of the homes which they would vacate. Out of this proposed change there developed, during a series of conferences and exchanges of correspondence, 10 questions on which it was found impossible to reach an agreement. By this time the controversy had reached a point where the brotherhoods had called in their vice-presidents, and in the case of the engineers, an assistant grand chief, and on February 23 the United States Board of Mediation was asked to serve as mediator in the dispute.

Mediation proceedings, with J. W. Walsh, a member of the Mediation Board, in charge, began on February 28 at Dallas, Tex., and on March 13 he reported the definite determination that the railroad could not return its terminals to Longview and Marshall and the withdrawal of this request by the employees, and the settlement of three other points, one by its withdrawal by the railroad. Mr. Walsh then asked that the remaining six questions be submitted to arbitration and in each case

this proposal was turned down by either the railroad or the brotherhoods.

On March 14 the brotherhoods sent statements of the controversy to their members, including with them, strike ballots, which on March 28 the officers of those organizations reported had been counted and found to support them in the calling of a strike. The strike was ordered for 6 o'clock on the morning of March 30 and was to have involved all train, engine and yardmen. Upon the appointment of the emergency board on March 29 the brotherhoods were prompt in calling off the strike.

The questions to be decided by the fact-finding board include the contention of the employees that schedule rules are not being observed at the Mineola terminal, compensation for losses on homes sustained by reason of the removal of terminals, the contemplated assignment of regular freight crews to certain fast freight service, adequate bus or other transportation to terminals at Fort Worth, Tex., Shreveport and Mineola, the pooling of cabooses in all freight service, the assignment of passenger engine crews to run between Fort Worth and Texarkana and the application of Texas & Pacific schedules and seniority rights to the Cisco & Northeastern, the Abilene & Southern, the Pecos Valley & Southern, the Weatherford, Mineral Wells & Northwestern and the Texas and New Mexico branches.

During the proceedings the railroad has shown that following the construction of Lancaster yard, at Fort Worth, the creation of an intermediate terminal between this point and Shreveport and Texarkana was an absolute necessity to enable it to give the service demanded by its patrons, to meet competition on through traffic and to handle the greatly increased volume of oil traffic growing out of oil development adjacent to the T. & P. line in West Texas. The movement of terminals, the railroad said, is not an unusual occurrence and it has not been generally the custom for the companies involved to allow compensation to employees or officers affected, and neither does it concern rules or rates of pay.

The employees object to the proposed assignment of regular crews to certain fast freight trains on the ground that it would be in conflict with certain schedule rules, while the railroad contends that serious consideration is being given to the necessity for this step as a means of providing better service and more regular movement of important schedule trains. The bus service question involves a demand by the employees that the T. & P. agree to maintain in the future such service to the yards at Fort Worth, Mineola and Shreveport, where it now exists.

The employees contend that passenger enginemen should be relieved at Longview instead of at Mineola on the Fort Worth-Texarkana runs. As regards the application of T. & P. schedules to five branch lines, the management holds that they are separate and independent properties on which it would not be consistent to extend the schedules.

THOMAS T. LYON, conductor, and George H. Furbush, engineman, who have just been retired by the Boston & Maine, had been respectively 61 years and 57 years in the service of the road. The total number of employees on the B. & M. pension roll is now about 600.

THE COLORADO & SOUTHERN, in hearings before the Public Utilities Commission of Colorado, previous to the granting of permission by that body for the closing of the Silver Plume (Colo.) station, showed that between 1923 and 1928 the cost of maintaining the station was $11,934 while the receipts were $4,469. During the last six months of that period the receipts were only $10.14.

Government Accident Report, 1928

THE Interstate Commerce Commission has issued its preliminary memorandum, subject to revision, giving a summary of accidents reported by the steam railways of the United States for the 12 months ending with December, 1928. It will be recalled that the report issued one year ago (*Railway Age*, April 14, 1928, page 854) showed the unparalleled record of only ten passengers killed in train accidents in the year 1927. The present figure is 16; but the yearly record, in this particular, still is far below any former year since the government records were established.

In the table below, the usual comparisons with the preceding year are given in the customary form. Following are the percentages of increase or decrease in the principal totals shown in that table, comparing 1928 with 1927:

Passengers killed, all causes	i 3.66 per cent
Injured	d 11.69 per cent
Employees killed, all causes	d 16.58 per cent
Injured	d 20.41 per cent
Trainmen killed, all causes	d 19.47 per cent
Injured	d 14.95 per cent

The total number of man-hours worked on Class I railroads in 1928 was 4,192,011,157 and in 1927, it was 4,406,627,775; and the casualties to employees per million man-hours were, in the year now reported, 0.30 killed and 16.82 injured; as compared with 0.34 killed and 19.87 injured in 1927.

The total locomotive miles in 1928 were, in millions, 1,700.77 and in 1927, 1,740.412. The total of *persons* (all classes) killed per million locomotive miles in 1928 was 3.61; in 1927 it was 3.67. Of employees on duty these percentages were, in 1928, 0.57 and in 1927, 0.67.

The principal totals for the two years, 1928 and 1927, were:

Casualties on Railroads, 1927 and 1928

	1928		1927	
	Killed	Injured	Killed	Injured
Passengers				
In train accidents	16	1,404	10	1,511
Train service accidents	67	2,055	69	2,375
Total of above	83	3,459	79	3,886
Non-train accidents	2	568	3	674
Grand total, passengers	85	4,027	82	4,560
Employees				
In train accidents	138	1,126	194	1,211
Train service accidents	824	22,465	972	26,715
Total of above	962	23,591	1,166	27,926
Non-train accidents	281	46,101	324	59,642
Grand total, employees	1,243	69,692	1,490	87,568
Other Persons				
In train accidents	118	343	82	350
Train service accidents	4,981	9,994	5,055	10,452
Total of "other persons"	5,099	10,337	5,137	10,802
Non-train accidents	82	1,505	112	1,880
Grand Total	5,181	11,842	5,249	12,682
Total, All Classes of Persons				
In train accidents	272	2,873	286	3,072
Train service accidents	5,872	34,514	6,096	39,531
Total of above	6,144	37,387	6,382	42,603
Non-train accidents	365	48,174	439	62,196
Grand Total	6,509	85,561	6,821	104,799

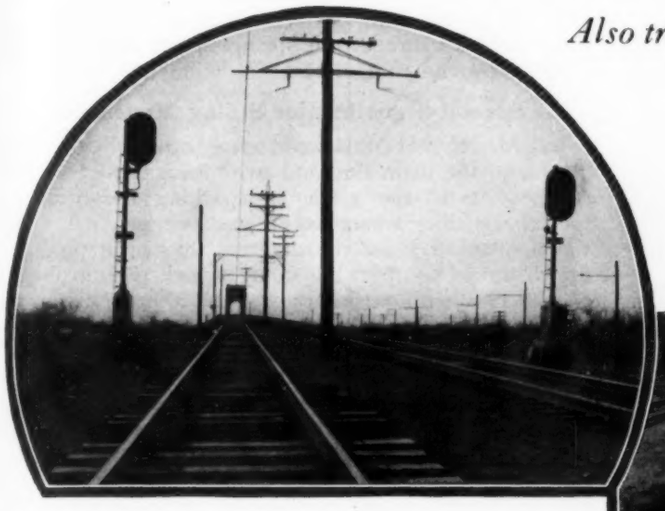
The total number of persons killed at highway grade crossings in 1928 was 2,968 and of injured, 6,667; in 1927, 2,371 killed and 6,613 injured.

In the casualties reported under the head of getting on or off cars or locomotives and struck or run over, not at public crossings, suicides or attempts at suicide, are excluded.

Automatic Gauntlet Signals Installed On the South Shore

Also train movements from interchange track and siding directed by signals

By
B. L. Smith
Signal Supervisor, C.S.S. & S.B.



View Looking West Toward Gauntlet

View Looking East From Gauntlet

THE Chicago, South Shore & South Bend has installed a unique arrangement of automatic interlocked signals for the protection of a gauntlet track near Gary, Ind., an interesting feature of which is that the signals also protect switching movements into and out of an interchange track with the Wabash, as well as passing track movements in this area. The South Shore is handling 44 passenger and 8 to 10 freight trains over this line daily, and, in the summer, as many as 62 passenger trains on Sunday. Passenger trains consist of from 2 to 8 cars, and freight trains, up to 40 cars. The South Shore carries fast l.c.l. freight with over-night service between points on its own lines, and interchanges at several points with steam roads.

The line is double track from Kensington, Ill., to a point about a mile east of Gary, Ind., a total of 17.6 miles. Some of the bridges in this territory were constructed for single track, and over these the two tracks run gauntlet. At the point under discussion, the South Shore main line is carried over the Pennsylvania and the Wabash main lines on a bridge, the gauntlet over which is about 758 ft. long. From each direction the tracks approach the bridge on an ascending grade of about 2.5 per cent for 2,100 ft.

Operation of Interlocked Signals

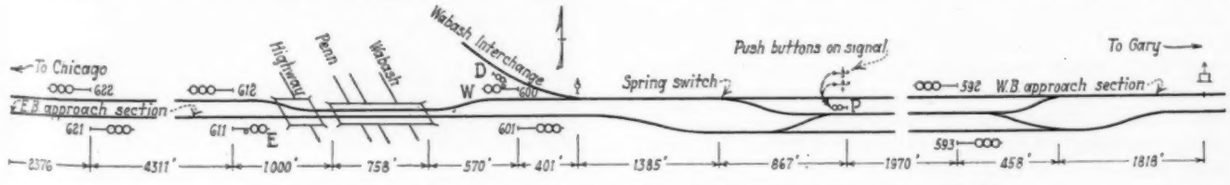
The automatically interlocked home signals, marked *E* and *W* on the diagram, are designated as absolute signals by a lunar white marker light mounted four feet below and to the left of the signal unit. When a train is stopped by such a signal indicating stop, it is necessary that a flagman precede the train over the gauntlet track into the clear on the other side.

The gauntlet signals normally indicate stop. When an eastbound train passes the second automatic signal in the approach of Signal *E*, the circuits are automatically checked to determine that the gauntlet is unoccupied and that no westbound train is in the westbound approach section. If such a condition exists, Signal *E* changes from red to green and the first automatic signal in approach, No. 621, changes from yellow (caution) to green.

As the train passes gauntlet signal *E*, the indication is changed from green to red, thus providing rear-end protection. After the train has passed over the gauntlet and proceeded into the clear beyond the first automatic signal, the control for the automatically interlocked gauntlet signal is returned to normal, and it is then in a condition to be accepted by other trains approaching in either direction.

Interchange Connection Causes Complications

The operation is the same for westbound trains except for the fact that westbound trains are superior by direction, and are given preference. If a westbound and an eastbound train enter their respective approach sections simultaneously, the signals for the westbound route clear, and the eastbound train is required to stop,



Track and Signal Plan Showing Location of Gauntlet and Passing Track

this result being accomplished by using a slow-pick-up relay in the eastbound circuits.

As shown in the diagram, a connecting track leaving the westbound main line at a point 400 ft. east of the westbound gauntlet signal, extends to a small interchange yard connected with the Wabash. Movements are made to this interchange about eight or ten times a

The Push Buttons Are Mounted on Dwarf Signal "P"

day. On such occasions, when a South Shore locomotive enters the connection, the switch is closed so as no longer to interfere with main-line movements. After the cars are coupled up and the train is ready to pull out, a trainman goes to the color-light switch indicator at the main-line switch and pushes a button; if the indicator gives a purple light this informs the trainman that no train is approaching on the westbound main line, and that he has authority to throw the switch. As soon as he does so, the dwarf signal marked *D* changes from "purple" to "yellow," giving the engineman authority to pull out on the main track. When the switch is thrown, a train pulling out will not cause the westbound gauntlet Signal *W* to change to clear, but if an eastbound train is approaching, the eastbound Signal *E* will be lined up automatically to give a clear indication because the route is not fouled by the switching movement being made. If an indicator only had been used at the transfer track switch, the freight crew might not always observe it, but with the Dwarf Signal *D* back of the clearance point on the interchange track, the engineman of the freight train must be governed by the indication of this dwarf signal.

To permit the handling of a considerable number of cars from the interchange at one time, and to reduce to a minimum the time that such movements will block the main line, a center passing track was constructed, starting about 1,500 ft. east of the gauntlet. This track is connected to each main track at both ends, and the west-end switch connection to the westbound track is provided with a No. 20 turnout. This switch is normally lined for the passing track, a spring and oil buffer being provided to permit westbound main-line trains to trail through at normal speed.

A freight train on the Wabash interchange track, after getting a proceed indication of dwarf Signal *D*, pulls out on the westbound main track and moves against the normal direction of traffic for about 1,400 ft., and through the switch normally lined for the passing track until the train is in the clear on this passing track. As all freight from the interchange moves west from this point, it is necessary to cut off the locomotive from the east end of the train and run it down the westbound main and back through the spring switch so as to couple to the west end of the train.

Special Signaling for Siding Movement

In order to move this westbound train out of the siding on to the main line and over the gauntlet without stopping it on the grade approaching the bridge, a special signaling arrangement was designed. A dwarf signal, marked *P* on the diagram, has been placed at the clearance point on the siding, which is controlled in conjunction with push buttons and the regular track circuits on the main tracks.

When a train on the passing track is ready to go, a trainman pushes a button marked "Set Up," which lines up the route and clears gauntlet Signal *W*, provided no train is on either approach section. At the same time the dwarf Signal *P* changes from "purple" to "yellow," which authorizes the engineman to pull out, and in the meantime the other gauntlet signal and westbound automatic Signal 592 are held at "stop" in order to stop any other approaching trains. If some unexpected delay prevents the freight train from pulling out as soon as the signals are lined up for the route over the gauntlet, the trainman pushes a second button marked "Restore," which restores the control of the gauntlet and automatic signals to the normal control so as to be operated by approaching trains on the main lines. At the same time, the dwarf Signal *P* is changed back from "yellow" to "purple," thus holding the freight train on the siding. As explained previously, this switch is normally lined for the passing track so that the westbound freight train pulling out of this track is not required to stop to open or close the switch. This arrangement is necessary in order to permit the freight train to get well under way so as to make the grade approaching the gauntlet. The signal equipment used on this installation was furnished by the Union Switch & Signal Company.

* * *

Entrance to Detroit River Tunnel on the Michigan Central at Detroit

The Norfolk & Western in 1928

Effects operating economies and passes savings on to patrons in form of lower rates

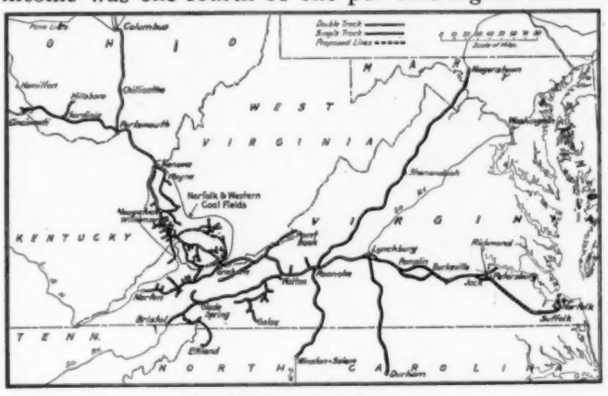
THE Norfolk & Western in 1928 handled virtually the same volume of freight business as it did in 1927. Passenger traffic, as could be expected, declined. Operating revenues were $106,947,111, a decline of 4 per cent from the preceding year. Of this decline 38 per cent is attributable to passenger and miscellaneous revenues and 62 per cent to freight revenues. The decline in the volume of freight business having been very slight, the decrease in freight revenue was largely due to rate reductions—particularly on lake cargo coal.

To meet the decline in gross revenues, the company made great progress in increasing its operating efficiency. The transportation ratio (to operating expenses) was reduced from 26.13 per cent to 24.88 and the maintenance of equipment ratio from 19.16 to 18.64. The maintenance of way ratio increased slightly—from 14.16 to 14.47—although the actual monetary outlay for this purpose showed a decrease of $235,815, or 2 per cent.

Taxation declined 11 per cent, which decline, mostly in federal taxes, was due in part to a reduction in the rate and in part to a credit for an excess accrual in previous years. The operating economies noted above brought about a reduction of the operating ratio from 62.82 in 1927 to 62.20 in 1928. This economy, combined with the reduction in taxation, resulted in an actual increase in net railway operating income—$34,204,057 in 1928 as compared with $34,010,950 in 1927. There were some decreases in non-operating income and some declines in reductions from gross income, so that net income was one-fourth of one per cent higher than in 1927 and earnings per share of common stock were $21.27—just one cent more than in the preceding year.

Table 1—A Year's Improvement in Freight Service Operating Efficiency

	1928	1927	Per cent of change Inc.	Dec.
Mileage operated	2,231	2,232	..	..
Gross ton-miles (thousands)	20,048,502	29,745,276	1.0	
Net ton-miles (thousands)	15,980,354	15,951,708	6.2	
Freight train-miles (thousands)	9,870	10,222		3.4
Freight locomotive-miles (thousands)	12,075	12,881		6.3
Freight car-miles (thousands)	619,559	606,118	2.2	
Freight train-hours	726,502	776,434		6.4
Car-miles per day	43.9	43.5	1.0	
Net tons per loaded car	43.8	44.5		1.6
Per cent loaded to total car-miles	58.9	59.1		1.7
Net ton-miles per car day	1,131	1,146		1.3
Freight cars per train	63.8	60.3	5.8	
Gross tons per train	3,044	2,910	4.6	
Net tons per train	1,619	1,561	3.7	
Train speed, miles per train hour	13.6	13.2	3.0	
Gross ton-miles per train-hour	41,361	38,310	8.0	
Net ton-miles per train-hour	21,996	20,545	7.1	
Lb. coal per 1,000 gross ton-miles	129	136		5.1
Loco. miles per loco. day	57.6	58.5		1.6
Per cent freight locos. unserviceable	9.4	8.6	9.3	
Per cent freight cars unserviceable	1.2	1.4		14.3



The Norfolk & Western

Savings from Greater Efficiency Passed on to Patrons

From the facts set forth above it appears that of the reduction of $3,174,429 in operating expenses and of $1,100,000 in taxation a part was applied to offset the decline in passenger traffic and an even greater part to reducing rates to shippers. Of the total savings in expenses of almost $4,275,000, only about $75,000 went to augment the stockholders' equity in the property.

A comparison of selected freight operating statistics of 1928 with those of 1927 is given in Table I. With a slight increase in gross ton-miles and net ton-miles, the reductions in freight train-miles of 3.4 per cent and in both freight locomotive-miles and freight train-hours of more than 6 per cent are most significant of improved operating efficiency. Both the average train-load and the average train-speed increased, carrying gross and net ton-miles per train-hour to new high levels. The Norfolk & Western stands not far removed from the top of

Table II—Norfolk & Western Operating Results, Selected Items

Years 1921 to 1928 Inclusive

	1921	1922	1923	1924	1925	1926	1927	1928
Average mileage operated	2,226	2,238	2,238	2,241	2,241	2,241	2,241	2,240
Total operating revenues $	80,718,802	90,352,887	95,591,682	97,707,310	105,218,991	120,409,038	110,948,200	106,947,111
Total operating expenses $	64,346,857	68,052,804	72,598,871	69,875,109	67,934,815	71,226,914	69,696,125	66,521,695
Net operating revenues $	16,371,945	22,300,084	22,992,811	27,832,202	37,284,175	49,182,124	41,252,075	40,425,415
Railway tax accruals $	4,730,000	6,000,000	6,225,000	7,400,000	8,600,000	11,075,000	10,300,000	9,200,000
Railway operating income $	11,613,964	16,292,145	16,741,639	20,418,662	28,655,153	38,094,793	30,938,334	31,218,144
Hire of freight cars—Cr. Bal. $	2,680,685	2,161,002	3,003,995	1,726,291	2,386,617	2,418,469	2,690,571	2,866,195
Net railway operating income $	14,479,836	18,590,689	20,008,866	22,463,369	31,510,952	40,922,151	34,010,950	34,204,057
Gross income $	15,587,343	19,774,166	23,613,076	23,546,593	32,391,083	42,430,648	36,195,468	36,105,884
Interest on funded debt $	5,360,232	5,057,789	4,622,613	5,064,022	5,366,857	5,224,780	5,127,620	4,966,918
Net income $	10,043,181	14,554,989	18,788,497	18,243,348	26,564,759	36,867,506	30,651,295	30,727,043
Preferred dividends (4) $	919,692	919,692	919,692	919,692	919,692	919,692	919,692	919,692
Common dividends—Rate	7	8	8	8	8	10	10	10
Common dividends—Amount $	8,505,271	9,934,008	10,304,433	10,563,752	10,890,199	13,883,657	13,985,910	14,017,090
Earnings per share on com. stock	$7.51	$10.67	$13.85	$12.85	$18.69	$25.71	$21.26	$21.27
Revenue ton-mile (thousands)	8,482,095	10,422,301	11,161,523	12,130,124	13,683,557	16,719,412	15,024,347	15,015,685
Revenue pass.-miles (thousands)	292,223	261,756	296,044	262,306	235,135	221,809	202,062	168,626
Revenue per ton per mile (cents)	0.793	0.745	0.729	0.699	0.682	0.650	0.666	0.649
Total revenue tons	29,684,935	37,357,078	42,574,883	44,425,701	50,266,557	58,188,077	54,846,560	54,053,476
Tons revenue bituminous coal	21,766,196	28,120,614	29,468,395	32,579,530	38,122,834	45,599,980	42,634,250	42,305,396
Per cent bituminous coal of total	73.33	75.28	69.22	73.33	75.84	78.37	77.73	78.27
Transportation ratio	37.17	32.27	33.54	29.90	26.74	25.15	26.13	24.88
Operating ratio	79.25	75.27	76.05	71.51	64.57	59.15	62.82	62.20

the list among American railroads in its gross and net ton-miles per train-hour.

The great increase in the traffic and earnings of the Norfolk & Western following 1921 is set out in detail in Table II. This increase reached a peak in 1926 and has since declined somewhat, but business remains at a high level and operating efficiency steadily increases. The transportation ratio, which is one of the best gages of the efficiency of operation, was 37.17 in 1921; 32.27 in 1922; 33.54 in 1923; 29.90 in 1924; 26.74 in 1925; 25.15 in 1926; 26.13 in 1927 and 24.88 in 1928. Incidentally the 1928 N. & W. transportation ratio was lower than the 1927 transportation ratio of all but six Class I roads, (Complete comparative data for 1928 is not as yet available).

Also in 1927 the N. & W.'s freight expense per freight gross ton-mile, 1.98 mills, was the lowest, with but one exception, of any of the roads having gross freight revenues in excess of $10,000,000.

Large Capital Expenditures

This increased efficiency and the handling of such a great increase in traffic has involved the expenditure of great sums for capital improvements and in such outlays the company has not stinted itself. The net increase in the capital investment in road and equipment for each of the last eight years is set forth in the following:

	Road	Equipment
1921	$4,658,772	$638,622
1922	3,256,121	7,477,485
1923	6,550,705	Decr. 594,046
1924	12,233,891	13,650,043
1925	13,519,550	10,839,502
1926	14,605,060	1,440,559
1927	12,706,922	7,742,392
1928	3,464,190	1,194,202

In 1921 the company had 100-lb. rail in 30 per cent of its total track mileage (all tracks) and 130-lb. rail in but 1 per cent of the mileage. In 1928 the proportion of 100-lb. rail had increased to 37 per cent of the total and the 130-lb. to 29 per cent.

In 1921 the company had 1075 locomotives with a total tractive power of 53,774,250 lb. In 1928 it handled a vastly increased traffic with only 855 locomotives of a total tractive power of 52,128,965 lb. The decrease in the number of locomotives was about 20 per cent, but the average tractive power per locomotive increased 22 per cent.

Over the same period of years the number of freight cars owned and leased increased from 46,254 with a total capacity of 2,426,980 tons to a total of 47,235 with a capacity of 2,834,859 tons. Here again the gain in average capacity per unit is very noticeable.

As is shown in Table II, bituminous coal provides over three-fourths of the tonnage of the Norfolk & Western, As is generally known, the coal in this territory is of unusually high quality, and vast untapped reserves of it remain to provide traffic in the years to come. To protect this prospective traffic and to provide for its immediate availability when needed, the company is extending its lines as necessary to tap new deposits. Two such extensions were authorized by the Interstate Commerce Commission during 1928. In addition to coal traffic, it cannot be overlooked also that there is considerable industrial expansion in the Norfolk & Western territory, the total number of new industries located on its lines in 1928 being 98, with an investment of $53,800,000 and employing 7,767 persons.

The Norfolk & Western is most conservatively capitalized. At the end of 1928 its funded debt represented but 40.9 of its capital obligations, with capital stock—$140,290,700 common and $23,000,000 preferred—the remainder. The corporate surplus at the end of 1928 totaled $161,881,541, or almost as much as the total outstanding stock.

The volume of traffic in 1928, while approximately the same in total as 1928, was lighter during the first half of the year than in the same period of 1927 and considerably heavier during the latter half of 1928 than in the latter half of 1927. This upward trend would seem to augur well for at least the first part of 1929, and current car loadings in the Pocahontas region seem to bear out this opinion.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended March 23 amounted to 960,698 cars, an increase of 10,504 cars as compared with the loading in the corresponding week of last year but a decrease of 42,838 cars as compared with 1927. Miscellaneous freight showed an increase of 28,516 cars as compared with the corresponding week of last year, and increases were reported in the loading of coke, ore and merchandise, but decreases were reported in the loading of grain and products, livestock, coal and forest products. The Pocahontas, Southern and Northwestern districts showed decreases as compared with last year but increases were reported from the others. The summary as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, March 23, 1929

Districts	1929	1928	1927
Eastern	226,238	215,216	231,501
Allegheny	200,573	188,184	211,645
Pocahontas	50,502	51,005	60,543
Southern	150,327	163,564	166,742
Northwestern	115,351	119,754	116,069
Central Western	136,908	135,592	141,466
Southwestern	80,799	76,879	75,570
Total Western Districts	333,058	332,225	333,105
Total All Roads	960,698	950,194	1,003,536
Commodities			
Grain and Grain Products	42,071	46,617	36,957
Live Stock	26,050	28,008	27,097
Coal	138,579	157,123	206,386
Coke	12,124	10,330	12,058
Forest Products	68,467	69,142	70,895
Ore	11,886	8,548	11,357
Merchandise L.C.L.	263,143	260,564	262,511
Miscellaneous	398,378	369,862	376,277
March 23	960,698	950,194	1,003,536
March 16	957,460	942,572	1,001,932
March 9	945,770	951,556	1,000,754
March 2	976,987	959,494	989,863
February 23	907,337	869,417	918,858
Cumulative total, 12 weeks	11,179,651	10,843,453	11,554,663

The freight car surplus for the week ended March 15 averaged 238,518 cars, an increase of 12,553 cars as compared with the week before. This included 96,867 coal cars, 95,933 box cars, 26,523 stock cars, and 10,147 refrigerator cars.

Car Loading in Canada

Revenue car loading at stations in Canada for the week ended March 23 totalled 66,418 cars, a decrease from the previous week of 6 cars and an increase over the same week last year of 2,102 cars

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
March 23, 1929	66,418	47,167
March 16, 1929	66,424	46,640
March 9, 1929	65,064	46,832
March 24, 1928	64,316	41,649
Cumulative Totals for Canada		
March 23, 1929	743,855	517,110
March 24, 1928	755,970	475,046
March 26, 1927	728,525	466,024

Westinghouse 300-hp. Oil-Electric Switching Locomotive

Westinghouse Builds 300-hp. Oil Locomotive

Light-weight engine drives variable-voltage generator—Cab structure extensively welded

By David G. Hershberger, General Engineer, and
R. O. Nash, Railway Equipment Engineer
Westinghouse Electric & Manufacturing Company

AN oil-electric locomotive for switching service, equipped with a light-weight, six-cylinder, solid-injection oil engine rated at 300-hp. capacity, has been developed by the Westinghouse Electric & Manufacturing Company. The first locomotive of this design has been in plant service since the first of the year at the East Pittsburgh, Pa., works of the builder. The performance has been very satisfactory.

The locomotive weighs 111,000 lb. and, with an adhesion factor of 25 per cent, develops a starting tractive force of 27,750 lb. The motors can develop a maximum starting tractive effort of 45,000 lb., 17,800 lb. at the hourly rating and 8,800 lb. at their continuous rating. The maximum speed for which the locomotive is designed is 30 miles an hour.

Electric-Welded Cab Structure

Special attention was given by the designers of this unit to the exterior appearance of the cab. The roof has been kept exceptionally clear of auxiliary apparatus. The mufflers, oil and water radiators, blower motors and fans, and water tanks have been placed in the removable section of the clerestory hatch. Screened air intakes are provided in the curved section on each side for admitting air to the blower fans underneath the radiators.

The height of the locomotive has been limited, making it specially suitable for operation around plants having low overhead construction.

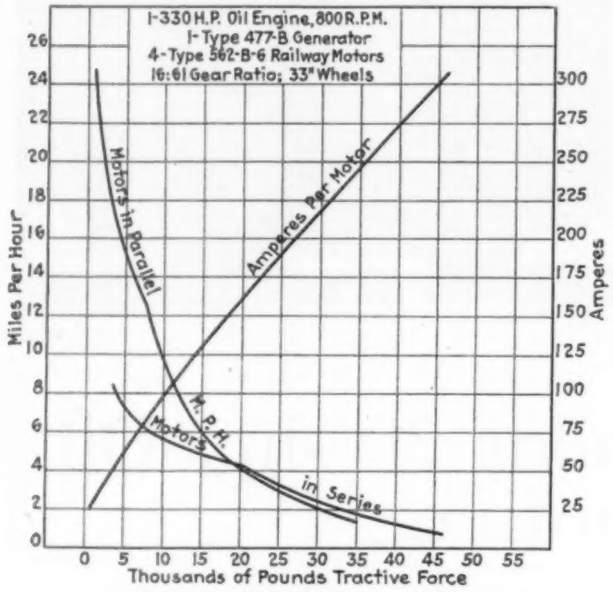
An interesting development was carried out in the construction of the cab. The underframing, carlines, and all structural parts of the cab except the side and end sheets, were joined by electric arc welding. The side sheets are riveted and the end sheets, being removable, are bolted. This construction has resulted in a very rigid cab.

The cab arrangement provides two operator's compartments. One extends across the end of the locomotive and is separated from the engine room by a bulkhead. It contains the equipment for the operation of the locomotive, consisting of the master controller, controls for lights, sanders, bell, horn and auxiliaries; the air-brake stand battery ammeter, air gages and indicating lamps. Another operating station is located in the opposite end of the cab and contains duplicate equipment. Sand boxes are located inside the cab at each end and are arranged for convenient filling either from a sand tower or hand bucket from the outside. The oil engine is located on the centerline of the cab.

Special attention to floor design resulted in an unusually wide aisle space around the power plant unit unobstructed by piping and conduit and presenting a clean cut appearance thus providing maximum accessibility for inspecting and servicing the power plant. The piping and wiring is placed in special ducts between two floor levels provided with oil-tight removable floor sheets. The lighting arrangement has been worked out for the

best possible illumination of all vital points in the cab and a permanent extension lamp is provided of sufficient length to reach any part of the locomotive. The cab is constructed to permit moving the engine and generator out one end of the locomotive, by the removal of the end sheet and sand box, or out through the clerestory opening by crane.

The control cabinet, oil tanks, lubricating oil strainer, air brake distributing valve, tool and supply cabinet, hand brake and battery box are placed along the sides of the locomotive. The batteries are put in place or removed from the outside of the locomotive but can be inspected and serviced from the inside through inspection doors on the top of the battery box. As a safety feature this box is well ventilated through louvres in the side and drained through holes in the bottom.



The Locomotive Performance Curve

The Truck Design

The trucks are designed to eliminate the end ties, thus providing greater accessibility to the traction motors and reducing the overall length of the truck. The brake cylinders are carried on the top of the bolster and the entire frame is spring supported through semi-elliptic springs on equalizers spanning the journal boxes, resulting in very simple construction. The wheel arrangement is B-B constituting a double-truck locomotive employing swivel-type trucks.

The cab and electrical equipment were designed and built at the East Pittsburgh plant of the Westinghouse Electric & Manufacturing Company. The trucks were built by Baldwin Locomotive Works from combined Westinghouse and Baldwin designs.

Oil Engine Weighs 23.3 lb. Per HP.

The four-stroke cycle engine is arranged to idle at 300 r.p.m. and to deliver full output at 800 r.p.m. The speed characteristics are such as to effect a marked reduction in weight per horsepower The engine, including flywheel, weighs approximately 7,000 lb. or 23.3 lb. per horsepower.

The oil engine is compact and rugged. The light weight is obtained by the proper selection of materials and by improved design. Some of the advantageous features besides light weight are economy and smoothness of operation. Economy is obtained by the use of high speed and high compression, insuring complete combustion. Smooth operation results from a careful balancing of parts and the use of a large crankshaft. Accessibility for maintenance is one of the most important features; the removal or replacement of atomizers, cylinder heads, valves and cylinder liners requires only a few hours time. Connecting-rod bearing are accessible from the sides of the engine.

Dimensions of the Westinghouse Oil-Electric Locomotive

Total weight	111,000 lb.
Weight per driving axle	27,750 lb.
Number of driving axles	four
Starting tractive force at 25 per cent adhesion	27,750 lb.
Maximum starting tractive force motors can exert	45,000 lb.
Tractive force, hourly rating	17,800 lb.
Tractive force, continuous rating	8,800lb.
Maximum safe speed	30 m.p.h.
Total wheel base	22 ft. 8 in.
Rigid wheel base	6 ft. 8 in.
Length overall	30 ft. 2 in.
Length of cab	25 ft. 0 in.
Width of cab	10 ft. 7¼ in.
Overall height of locomotive	13 ft. 6¼ in.
Diameter of drivers	33 in.
Engines per cab	One
Type and fuel	Solid injection—Oil
No. and size of cylinders	6—8¼ in. by 12 in.
Cycle	Four-stroke
Rating	300 hp. at 800 r.p.m.
Idling speed	300 r.p.m.
Generator, No. and type	One—Type 477
Generator rating	210 kw., 600 volt
Auxiliary generator, No. and type	One—Type YG-9A-2
No. and type of motors	Four—562-D-6
Gear ratio	16:61
Battery	64 volts, 225 amp.hr.
Compressors, No. and type	Two—DH-20

The fuel-oil, lubricating-oil and water pumps are integral with the engine. Finally the engine presents a neat appearance, all valve and rotating parts are being totally enclosed.

The Westinghouse oil engine is built at the South Philadelphia works of the builder. The present design is the result of several years' experience in the field with oil-electric power plants in cars and locomotives.

The Generator and Motors

The main generator is a 750-volt, 210-kw. variable-voltage direct-current machine receiving field excitation from a 64-volt, 5.3-kw. direct-current auxiliary generator. The auxiliary-generator armature is pressed on an extension of the generator shaft while the stator is bolted to the main generator bracket and is easily removable. The commutator end of the armature is carried on a sleeve-type bearing while the engine end of the armature is bolted to the flywheel and is carried by a double bearing in the engine.

The principal function of the main generator is that of supplying power to the traction motors. It is also used as the starting motor for starting the engine, receiving its power from the 64-volt, 204-ampere-hour storage battery. And lastly, it serves to charge the battery and supplies power for operating the compressors and auxiliaries at engine idling speed of 300 r.p.m.

The auxiliary generator, besides supplying power for excitation of the field of the main generator, furnishes power for compressor operation and battery charging when the main generator is running at higher than idling speeds.

The motor equipment consists of four 562-D-6 locomotive-type traction motors, 16:61 gear ratio and having an hourly rating of 146 amperes at 600 volts or a continuous rating of 85 amperes at 300 volts. They are self ventilated. This type of motor was designed for a high tractive force at low speed for trolley-type locomotive service and is an ideal application for switching service with an oil-electric locomotive. This type of motor has seen a tremendous amount of service on trolley-type locomotives and has an established record for reliability.

Air Brake Equipment

Westinghouse No. 14-EL air-brake equipment is used on this locomotive. The brake valve and handles are carried on a pedestal which facilitates piping and presents a neat appearance. This equipment supplies straight air operation for the locomotive and automatic operation for locomotive and train. Air is supplied from two DH-20 motor-driven compressors mounted underneath the locomotive between the trucks. The compressor motors are wound for 64 volts and operate from the main or auxiliary generators as previously explained. The switching of the compressor connections is automatic, thus assuring full air supply at all times.

Control Apparatus Allows Multiple Operation

The unit switches, magnetic contactors, motor reverser, motor cutouts, and battery control switches, resistors fuses and torque governor are mounted in a steel cabinet at the side of the cab and next to the bulkhead.

Master controllers are located at diagonally opposite corners of the locomotive. Each has a main operating lever and a reverse lever with customary mechanical interlocking between the reverse drum and the power drum. This is to prevent unauthorized operation of the power drum when the reverse lever is removed or operation of the reverser when power is applied to the traction motors.

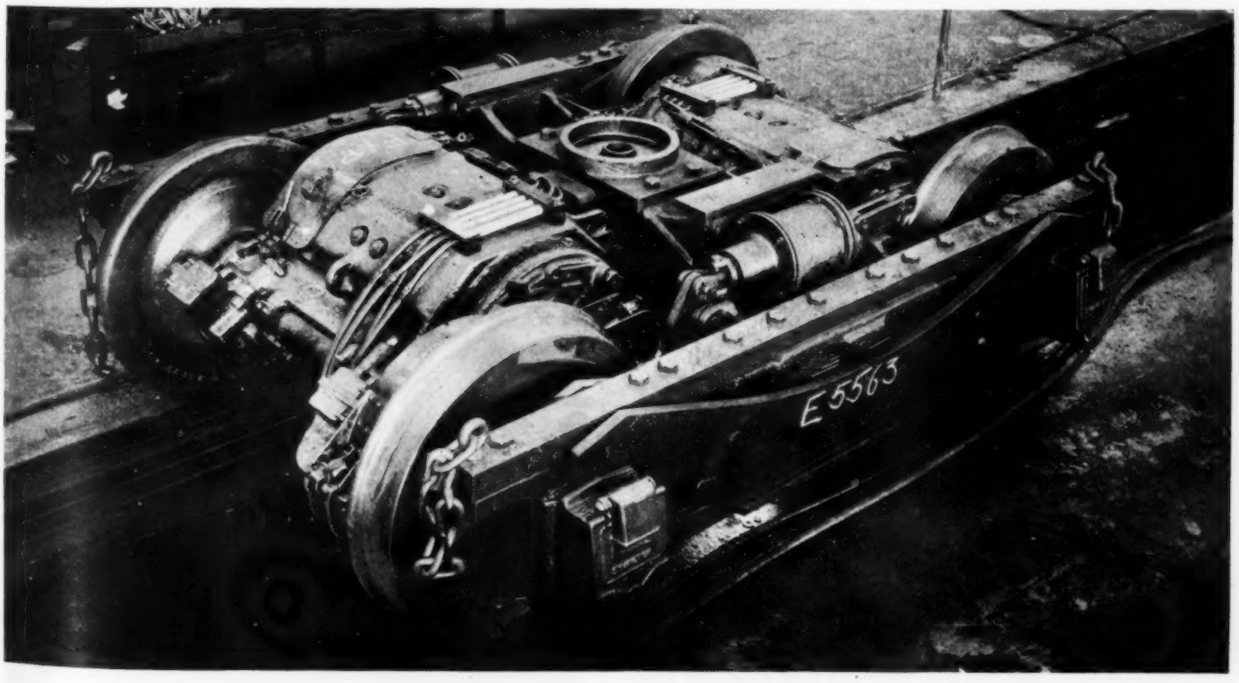
The controller for starting the engine is mounted over the battery box and near the front end of the engine, thus permitting easy access to the decompression lever and fuel trip on the engine. This controller serves to connect the main generator to the storage battery and governs the acceleration of the engine to firing speed. It is operated by the reverse lever from the master controller, thus automatically protecting against improper operation.

The operation of the locomotive from the master controller is similar to the operation of ordinary electric-locomotive equipment. With the controller in the off position all traction-motor switches are open and the engine rotates at 300 r.p.m., which is the idling speed.

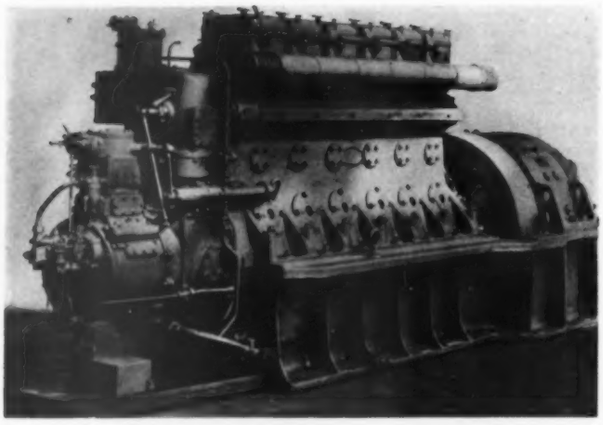
End View of the Oil-Electric Locomotive

No. 1 notch serves to connect the traction motors to the generator and to speed up the engine. Each successive notch tends to speed up the engine further, at the same time increasing the voltage on the generator, and thus increasing the impressed voltage on the traction motors. A liberal number of notches are available so that the speed increments are held to a low value.

An electro-pneumatic operating head is utilized to control the speed of the oil engine at any given controller setting. Its design is such as to make it readily applicable to multiple operation of similar locomotives from



Motors Are Easily Accessible in the Truck



Intake Side of the 300-hp. Oil Engine

one operating station. Likewise a number of oil engines may be operated from the same master controller with this type of operating head.

While the combined characteristics of the generators and traction motors favor the characteristics of the oil engine, a governing device is used to complete the function of proper loading of the oil engine by the electrical equipment. It is a relay having a saturation characteristic identical with that of the main generator and carrying two sets of windings. The main-generator field current passes through one set and the other one receives a current proportional to the main-generator armature current. The resultant magnetic force produced by these windings is therefore proportional to the torque acting upon the main-generator shaft. This relay regulates the generator voltage, maintaining a value that will load the oil engine to its rated capacity and prevent overloading. It insures against the possibility of stalling the oil engine and permits the engineman to notch out to the last position in order to obtain full engine power when moving a heavy load at low locomotive speed.

The control is arranged to obtain series and parallel operation of the traction motors. When starting, the motors are connected in series-parallel combination and remain in this combination until the controller is notched through the full engine speed range when the change over to parallel operation occurs on the last notch with the oil engine operating at full speed. If the controller is retained on the last notch the engine will deliver its full power and the train will be accelerated to its full speed. Regulation of the speed in parallel is obtained by moving the controller forward as desired. Provision is made for parallel operation of traction motors at all times, if desired, by closing a transfer switch located in the control cabinet.

Meter equipment is kept at a minimum. Two air-brake gages and a battery ammeter comprise the meter equipment. Two indicator lamps mounted in a neat panel above the operator's station at each end indicate the temperature of the cooling water for the oil engine; a green light indicates most desirable temperature and a red light indicates too high temperature.

A separate control box or auxiliary controller serves to control the various lighting circuits, to apply sand or to stop the oil engine.

Sanding of the rail in the direction of the locomotive travel is insured by the use of only one sander-switch lever. The electrical connections from this switch to the electro-pneumatic sander valves are carried through the reverse drum of the master controller so that the selection of the proper sanders is automatic.

Should the pressure of the lubricating oil become dangerously low the control is arranged to trip out the fuel control thus shutting the engine down.

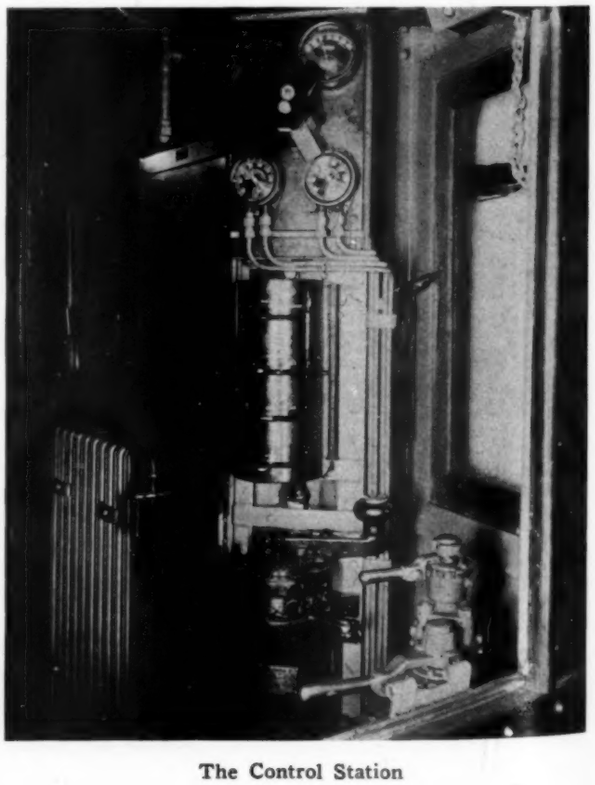
Cooling System Uses Forced Ventilation

Positive cooling of the water and lubricating oil is insured by forced ventilation of the radiators which are placed in the clerestory above the generator location. Two blower motors of the vertical type, thermostatically controlled, drive propeller-type fans. One blower ventilates the water radiators and the other the oil radiators. Manually operated by-pass valves are provided for both the oil and water radiators to permit rapid warming up of the engine or to maintain the most desirable temperatures for efficient engine operation during extremely cold weather.

When the engine is shut down the radiators automatically drain back into the water tank suspended from the clerestory hatch and the lubricating-oil tank on the side of the cab, thus protecting them against freezing.

A hot-water heating system is employed for heating the operators' compartments when running and for heating the engine cooling water, through interconnection of the two systems, when the engine is shut down. By circulating the engine cooling water through the heater an even temperature is maintained throughout the entire engine, thus facilitating the starting operation and protecting moving parts by insuring immeditate lubrication at all points when starting up. When operating in moderately cold weather the entire locomotive may be heated from the engine cooling water by interconnecting the two systems. The piping layout is such that ideal circulation is maintained in either direction. This feature reduces fuel expense for heating the locomotive during operation.

Two cylindrical fuel-oil tanks are located in the cab, one on each side, arranged for filling from either a position on the roof, by a gravity supply, or from a position on the ground, by a pressure supply. A K.-S. telegage is used for indicating the level of the oil in the tanks.



The Control Station

Baldwin Locomotive Works' Executive Changes

Samuel M. Vauclain becomes chairman of board of directors and is succeeded in presidency by George H. Houston

SAMUEL M. VAUCLAIN, president of the Baldwin Locomotive Works since May, 1919, was, on March 28, elected to the chairmanship of the company's board of directors. George H. Houston of New York, associate of Fisher Brothers, was chosen president to succeed Mr. Vauclain. Thomas S. Gates of Drexel & Co., bankers, who had been chairman of the board and of the executive committee, was re-elected to the latter office after having resigned the former.

"This new alignment of the executive organization of Baldwin," a statement issued in connection with the changes said, "means a continuation of the aggressive management Baldwin has enjoyed in the past, coupled with a more active participation of the Fisher interests, large holders of the common stock of the company."

Samuel M. Vauclain

George H. Houston

Mr. Vauclain was born in Philadelphia on May 18, 1856, and has been connected with the Baldwin Locomotive Works or its predecessors since 1883. He entered the employ of the plant as a foreman and within two years, in November, 1885, he was promoted to superintendent of equipment. In the following year he was further advanced to general superintendent. He remained in that position until 1911 when he became vice-president to be further advanced to the senior vice-presidency in 1917, two years prior to his election to the presidency. It was through his work as manager of operations in the Baldwin plant that Mr. Vauclain became generally recognized as one of the country's leaders in shop management.

Mr. Vauclain's greatest work, however, was during the war, not only in connection with the work of the Baldwin Locomotive Works in supplying locomotives for the allied armies overseas, but also in connection with the great shell making plant of the Eddystone Munitions Company at Eddystone, Pa. He was, on a number of occasions, called into consultation with various of the allied governments and so well was his work recognized that he was made a Chevalier of the Legion of Honor by the French Government. In connection with the United States' participation in the war he served with the Council of National Defense, first in an advisory capacity and later as chairman of the committee on ordinance and as chairman of the committee on cars. After the War Industries Board was organized he became chairman of that body's special committee on plants and munitions and was also the head of the committee of car and locomotive builders.

Mr. Vauclain's successful direction of the Baldwin Locomotive Works, following his election to the presidency, culminated in the establishment of the company in its new and modern plant at Eddystone, Pa. Ceremonies in connection with the transfer from Philadel-

phia were held on June 28, 1928. Mr. Vauclain has won national recognition as a leader of industry and as an interpreter of its policies and problems to the general public.

Mr. Houston, Mr. Vauclain's successor in the Baldwin presidency, is a well-known industrial engineer. He was born at Covington, Ky., on January 4, 1883, and received his early education in the public schools of that city and at the Cincinnati Technical School. He became associated with the Fisher Brothers of Detroit as a technical advisor when they established the Fisher Body Company and, among other affiliations, has been associated with them ever since. From 1916 to 1920 he was a member of the engineering firm of George W. Goethals Company and headed his own firm during the years 1921 and 1922. During this latter two-year period Mr. Houston was identified with the reorganization and subsequent management of several industrial concerns. He was recently elected a director of the Baldwin Locomotive Works.

Greater Traffic Expected During Second Quarter

WASHINGTON, D. C.

SHIPPERS of the country, through estimates of the shippers' regional advisory boards, announced by the Car Service Division of the A. R. A., anticipate that carload shipments of the 29 principal commodities in the second quarter of this year, (April, May and June) will be approximately 8,836,714 cars, an increase of 612,844 cars, or 7.5 per cent, above those of the corresponding period of 1928. These estimates are based on the best information as to the outlook, so far as transportation requirements are concerned, obtainable at the present time by the commodity committees of the various boards.

Of the 13 shippers' regional advisory boards, 12 anticipate an increase in their respective districts in transportation requirements for the second quarter of the year compared with the same period last year. These are the Atlantic states, Allegheny, Great lakes, Ohio valley, Northwestern, Pacific coast, Southwestern, Middle-western, Central-western, Trans-Missouri-Kansas, New England and the Pacific-northwest boards. The only boards estimating a decrease is the Southeast, which expects only a small reduction, however.

The estimate by each shippers' regional advisory board as to the freight loadings by cars anticipated for the 29 principal commodities in the second quarter this year compared with the corresponding period in 1928 and the percentage of increase or decrease follows:

Board	1928	1929	Per Cent of Increase or Decrease
New England	171,450	179,977	5.0 Increase
Atlantic States	916,705	942,840	2.9 Increase
Ohio Valley	1,010,969	1,084,263	7.2 Increase
Northwest	465,872	483,233	3.7 Increase
Central-Western	262,508	263,525	.4 Increase
Pacific Coast	369,950	403,787	9.1 Increase
Pacific Northwest	303,601	314,429	3.6 Increase
Allegheny	1,047,288	1,193,781	14.0 Increase
Great Lakes	664,837	728,591	9.6 Increase
Mid-West	1,089,116	1,280,211	17.5 Increase
Trans-Missouri-Kansas	407,235	425,951	4.6 Increase
Southwest	515,445	546,964	6.1 Increase
Southeast	998,894	989,162	1.0 Decrease

The large comparative increases in estimates over last year in the Midwest, Allegheny, Great lakes and Pacific coast regions are due to a number of factors. In the Midwest region, for instance, it is due to the anticipated heavier movement of coal and coke; iron and steel; automobiles, trucks and parts; potatoes and grain. In the Allegheny region, it is due in part to the anticipated heavier movement of coal and coke, chemicals and explosives; machinery and boilers and gravel, sand and stone. In the Great lakes, the anticipated requirements for freight cars is expected to be stimulated by the heavier movement of grain, potatoes, ore and concentrates, salt, and automobiles, trucks and parts. Heavier movement of citrus fruits is indicated by the estimate of the Pacific coast region for the second quarter.

In submitting reports to the Car Service Division, each board estimated the freight car requirements for the principal industries found in the territory covered by that board. On the basis of this information, it is estimated that of the 29 commodities, increases in transportation requirements will be required for 22 as follows: All grain, flour, meal and other mill products; cotton; citrus fruits; other fresh fruits; other fresh vegetables; poultry and dairy products; coal and coke; ore and concentrates; salt; lumber and forest products; petroleum and petroleum products; sugar, syrup and molasses; iron and steel; machinery and boilers; cement; brick and clay products; lime and plaster; agricultural implements and vehicles other than automobiles; automobiles, trucks and parts; paper, paperboard and prepared roofing and chemicals and explosives.

Commodities for which a decrease is estimated are: Hay, straw and alfalfa; cotton seed and products, except oil; potatoes; live stock; gravel, sand and stone; fertilizers, and canned goods, which includes all canned food products.

The estimate for various commodities follows:

Commodity	Actual 1928	Estimated 1929	Estimated Per Cent Increase	Estimated Per Cent Decrease
Grain, all	294,319	339,544	15.4	
Flour, meal and other mill products	224,383	230,883	2.9	
Hay, straw and alfalfa	71,959	64,120		10.9
Cotton	37,858	40,057	5.8	
Cotton seed and products, except oil	14,188	13,391		5.6
Citrus fruits	24,855	36,664	47.5	
Other fresh fruits	77,888	83,119	6.7	
Potatoes	70,737	63,050		10.9
Other fresh vegetables	76,161	80,846	6.2	
Live stock	346,947	334,233		3.7
Poultry and dairy products	46,964	49,136	4.6	
Coal and coke	2,305,911	2,645,556	14.7	
Ore and concentrates	556,575	602,841	8.3	
Gravel, sand and stone	879,965	874,829		.6
Salt	32,214	33,664	4.5	
Lumber and forest products	924,672	942,527	1.9	
Petroleum and petroleum products	539,972	579,281	7.3	
Sugar, syrup and molasses	42,481	47,097	10.9	
Iron and steel	483,033	531,345	10.0	
Machinery and boilers	56,040	61,385	9.5	
Cement	240,923	253,448	5.2	
Brick and clay products	186,037	192,984	3.7	
Lime and plaster	71,937	72,763	1.1	
Agricultural implements and vehicles other than automobiles	35,265	38,979	10.5	
Automobiles, trucks and parts	263,260	309,907	17.7	
Fertilizers, all kinds	155,694	145,627		6.5
Paper, paperboard and prepared roofing	104,251	110,988	6.5	
Chemicals and explosives	24,342	26,317	8.1	
Canned goods—All canned food products (includes catsup, jams, jellies, olives, pickles, preserves, etc.)	35,039	32,133		8.3
Total All Commodities Listed	8,223,870	8,836,714	7.5	

THE STABLE MONEY ASSOCIATION, 104 Fifth Avenue, New York City, announces that Frederic A. Delano, former president of the Wabash, has been chosen president of that association.

STEVENS INSTITUTE OF TECHNOLOGY, Hoboken, N. J., has offered to the Pennsylvania for the academic year, 1929-30, a free scholarship, to be given to a son of a living or deceased employee of the road. Applications are to be submitted to R. V. Massey, vice-president of the railroad at Philadelphia. The scholarship includes board and lodging (as well as tuition) at a six weeks' civil engineering camp in the summer of 1930.

Containers as an Operating Problem

Transportation officers present testimony at Kansas City hearing—Shippers also testify

THE use of container cars in the West would result in a large increase in empty car mileage, according to testimony presented by H. M. Eicholtz, assistant general manager, Chicago & North Western, at the Interstate Commerce Commission hearing on the use of container cars at Kansas City, Mo., on March 28-29, presided over by Attorney-Examiner Harry C. Ames. Mr. Eicholtz explained the operating situation existing in the West, which requires a heavy westbound movement of empty box cars for grain loading, and empty refrigerator cars for perishables. The North Western, in common with other western roads, has taken advantage of this by loading less-than-carload merchandise in such cars wherever possible, thus utilizing what would otherwise be a non-productive movement, and at the same time saving cars which would otherwise have to be used for loading such merchandise. Under the container plan, Mr. Eicholtz pointed out that such utilization of equipment would be impossible and that non-productive car mileage would be increased, besides which it would be necessary to incur further empty mileage in returning the container cars to the eastern section of the railway.

E. H. Holden, general superintendent of transportation of the Kansas City Southern, also testified as to the transportation features and presented statistics in support of his argument that, in the East, the containers are used sparingly by individual shippers, most of the use being by forwarding companies. This situation is worse in the Southwest, he maintained, and presented exhibits showing the less-than-carload tonnage moving on the Kansas City Southern, which, he said, would indicate that container service could not be used at all northbound, because of lack of tonnage, and southbound only in connection with a forwarding company. Mr. Holden said that if the K. C. S. were compelled to operate container service by the installation of this practice on other roads, it could only be done at a loss of nearly $12,000 a year, and presented exhibits in support of his claim.

The Rate Basis

The Missouri Pacific, having presented its case at the Dallas hearing, gave little testimony at Kansas City, being content with cross-examination of various witnesses, under the direction of H. H. Larrimore, interstate commerce counsel. J. A. Brown, assistant vice-president of the M. P., was called upon by Examiner Ames to explain the basis on which the container rates were made. He said that the basis for the rates on 4,000-lb. containers was the average of the first four class rates, and that the rates for 10,000-lb. containers were based on Class A rates. He explained that the purpose was to establish a rate which would be used. Based upon the experience of the eastern lines, it was found that shippers were unwilling to avail themselves of the container service at the regular class rates; a further deterrent being Rule 10 of the Western Classification, which provides that, on shipments of mixed classifications, the rate covering the highest class commodity shall be used.

He continued: "Desiring to cut the carload rates as little as possible, and, at the same time, have a rate that would be an inducement to the shipper, we took an average of the first four classes, feeling that there was, in reality, only a small percentage of the carload tonnage handled moving under first, second, third or fourth class rates.

"As to the 10,000-lb. container rates, when a shipment of 10,000 lb. is made it takes on the characteristics of a carload. Accordingly, Class A rates, the highest of the so-called "carload rates," were used as a basis. We figure that, for the lower weight of 4,000 lb., we should have a higher rate, also with the idea of offering an inducement to the shipper to load larger weights, if possible. Therefore, we graded the rates downward from the average of the first four classes to the Class A rate. The rates as shown are the highest we could justify in view of all conditions."

Cost Figures Questioned

J. W. Bourscheidt, auditor of the St. Louis Southwestern, and G. F. Vivian, cost accountant of the Chicago, Milwaukee, St. Paul & Pacific, questioned the cost figures produced by the M. P. at the Dallas hearing. Mr. Bourscheidt also presented, in support of his contention that the saving in loss and damage would not be as great as anticipated, a statement showing the causes and amounts of all claims on less-than-carload traffic on the Cotton Belt for a year, showing a total of $26,287 paid in claims. He stated that much of this sum could not have been eliminated, even if containers had been used.

Mr. Vivian reviewed the cost figures in detail and pointed out various apparent discrepancies in the method used in arriving at the saving which would be made in the cost of billing.

Says Rate Situation Endangered

G. A. Hoffelder, assistant general freight agent of the Chicago, Burlington & Quincy, entered a number of voluminous and carefully prepared exhibits upon the records. Mr. Hoffelder stated that the lower rates for container service seriously jeopardized the existence of the present basis of rates and weights, by defeating the through class rates from St. Louis to points west of the Missouri river. Both the carload and less-than-carload rates would be faced with drastic reductions, he added, or else the railways not using containers would be faced with loss of traffic if the rates were not met. He stated that the fixing of rates on less-than-carload traffic by weight, regardless of classification, was practically unprecedented, and would result in the virtual destruction of the classification ratings which are the result of many years of experience, care and study.

Mr. Hoffelder's exhibits included a statistical summary of the distribution of manufacturing and population in various sections of the country, also of the less-than-carload traffic density, from which he drew comparisons which he said indicated that, regardless of the need for container service elsewhere, it could hardly be justified west of the Mississippi river.

Among the exhibits were several comparisons of the present class rates and the proposed container rates, which, Mr. Hoffelder said, indicate that it would be a practical impossibility for the carriers to justify their present rates if the container rates were permitted to become effective. On the analogy that container ship-

ments are, in reality, small carload shipments, Mr. Hoffelder maintained that the carriers will be asked to apply the same sliding scale of rates as the weight increases, on regular carload shipments, to the extreme detriment of the present rate structure.

He also pointed out discrepancies in the figures as to saving the costs of billing. By using merchandise cars shipped via the Burlington from St. Louis as examples, he showed that many of the waybills were made by eastern lines, which would still be the case if containers were used, and that a large number of the cars moved beyond the limits of container service and would also require separate waybills.

Shippers' Organizations Object

F. P. Willette, manager of the Chamber of Commerce of Atchison, Kan., also representing the Chamber of Commerce of Leavenworth, Kan., was the first representative of shippers' organizations to testify. He was followed by C. F. Real, transportation commissioner of the Chamber of Commerce of Topeka, Kan., and W. H. Fitzpatrick, traffic manager of the Chamber of Commerce of St. Joseph, Mo. Each of these men presented a number of exhibits, and the consensus of their testimony was that the container rates would be highly detrimental to the jobbers in their cities. J. C. Murray, representing the Chamber of Commerce of Little Rock, Ark., also asked that his organization be placed on record in opposition to the proposed tariff.

They pointed out that most of the jobbers' profits are to be found in the spread between the carload and less-than-carload rates and any disturbance in the ratios between such rates is sure to cause extremely adverse effects in the jobbing business. Their further contention was that the container rates would give an undue advantage to the larger cities, such as St. Louis, Chicago and Kansas City.

When Attorney Larrimore pointed out that container rates would, in all probability, be extended to include their cities, they stated that the advantages of the larger cities would still prevail, since there was a vastly greater tonnage from those cities, and, by consolidated shipments, the advantage of the larger cities would still be overwhelming. Mr. Real also served notice that, if the container rates were made effective, the Topeka Chamber of Commerce would immediately make a plea for generally reduced rates, both carload and less-than-carload, using the container rates as a basis. The various chambers of commerce also put representatives of local jobbers on the witness stand, to explain the details of how the container rates would affect their particular business.

Other Shippers' Testimony

J. H. Tedrow of the Kansas City Chamber of Commerce stated that his organization was opposed to containers generally, but that, if such service were to be made effective to St. Louis and Chicago from points east, it should also be extended to Kansas City. He stated that, if it were not, St. Louis and Chicago would be given an unfair advantage, since it would be possible for jobbers in those towns to deliver goods to consumers in competitive territory at a lower cost than that effective from Kansas City.

He stated that Kansas City shippers were opposed to the container service in general, principally because of its requiring the use of a forwarding company as an intermediary in practically every instance. He said that the shippers were extremely averse to placing their transportation at the mercy of such companies, which could, if they wished, exercise unfair discrimination in the matter of rates and service. He maintained that such opportunities for discrimination were exactly what the Interstate Commerce Act sought to prevent.

J. M. Harty, traffic manager of the Federated Metals Corporation, St. Louis, testified that his company would find container service and rates highly useful. He said that the eastern plants of his organization are using the container service provided there and have found it to be practical and economical, giving the advantages of reduced rates and, at the same time, reducing packing charges.

J. W. Montgomery, representing the Freight Bureau of Memphis, Tenn., which organization, he said, comprised 95 per cent of the Memphis shippers and receivers, also testified in favor of the container service. He stated that his organization felt that the service would prove of great benefit to practically every shipper in Memphis and that it should be given a fair and impartial trial.

The hearing was adjourned to re-convene in New York on April 4.

* * * *

The Santa Fe's "California Limited" Entering Grand Canyon, Ariz.

The Round Bottom Basket and Loose Stowing Were Responsible for the Condition of These Carrots

Claim Payments Again Decrease

Fresh fruits and vegetables are the only commodities which show a sizable increase in 1928

FREIGHT claims paid by Class I carriers of the United States during 1928 amounted to $36,557,243, which amount is the lowest in any year since 1914. In contrast to $38,713,059 paid in 1927, this represents a decrease of $2,155,816 or 5.6 per cent. Of the 16 causes to which the payments are assigned, 13 showed decreases varying from 2.8 per cent to 24.2 per cent while rough handling increased 0.5 per cent, concealed damage, 6.7 per cent and fire or marine loss, 63.7 per cent. The excellent service and efficient operation of the carriers is reflected in the reduction of 4.6 per cent in payments for unlocated damage, 19.9 per cent in delay, 18.8 per cent in error of employee, 18.8 per cent in robbery of entire package, 20.7 per cent in robbery of other than entire package and 24.2 per cent in concealed loss.

Claims paid on fresh fruits and vegetables amounted to $9,406,278 or 25.7 per cent of the entire claims paid, although these commodities represent less than 2 per cent of the total tonnage carried and less than 2 per cent of all cars loaded. This is an increase of $198,724 over 1927 and is larger than on any of the 19 commodities on which claims were paid, the next largest amount being $2,508,237 on live stock and $2,144,957 on new furniture. Other commodities on which claims increased were new furniture, $6,713, flour and mill products, $121,581, and sugar, $4,827.

The three outstanding causes of claim payments are delay, temperature failure, and general damage. In 1922, delay was the principal cause, but this has since been reduced from $5,021,506 in that year to $2,816,624 in 1928 by the efficient performance of the railroads. Claims due to temperature failure have been reduced from $2,642,158 in 1922 to $1,216,186 in 1928. On the other hand, claims due to general damage, broken packages, etc. have increased from $15,175,305 in 1922 to $17,983,773 in 1928. The last named cause involves

Freight Claims Paid During 1928 According to Causes

	1928	1927	Decrease or (* Increase)	
Rough Handling	$10,390,292	$10,342,269	*$48,023	*0.5%
Unlocated Damage	7,593,481	7,960,407	366,926	4.6%
Delay	2,816,624	3,518,613	701,989	19.9%
Defective Equipment	2,857,100	2,939,720	82,620	2.8%
Concealed Damage	2,853,492	2,673,474	*180,018	*6.7%
Wreck	2,442,743	2,603,309	160,566	6.2%
Loss Entire Package	1,780,730	2,139,057	358,327	16.8%
Other Unlocated Loss	1,631,495	1,739,142	107,647	6.2%
Error of Employee	741,004	912,480	171,476	18.8%
Improper Handling, Loading	748,054	816,115	68,061	8.3%
Freezing or Heater Failure	630,227	764,089	133,862	17.5%
Robbery Entire Package	563,481	694,355	130,874	18.8%
Improper Ref. or Vent.	585,959	669,040	83,081	12.4%
Robbery Other Entire Pkg.	365,082	456,781	91,699	20.7%
Concealed Loss	202,632	267,406	64,774	24.2%
Fire or Marine Loss	354,857	216,802	*138,055	*63.7%
Carload	$27,248,200	$28,443,175	$1,194,975	
Less Carload	9,309,043	10,269,884	960,841	
Total	$36,557,243	$38,713,059	$2,155,816	5.6%

Cabbage Crates, with Slats Nailed at Each End with Two Wire Nails, Could Not Withstand Shipment

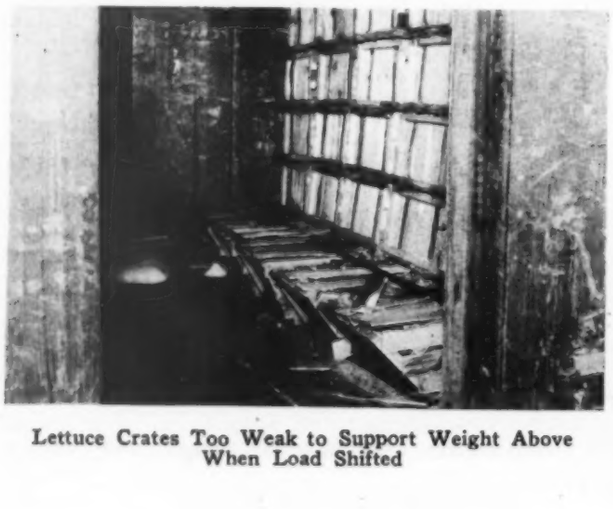
two important factors, loading and unloading, which are almost entirely under the control of the shipper and the consignee. Better loading is a matter of education. Considerable has been accomplished in improving containers and, at present, efforts are being made to secure proper loading and stowing.

A seven-year comparison of the three major causes for loss and damage to fresh fruits and vegetables with

Claims Paid in 1928 According to Commodities

	1928	1927	Decrease or (* Increase)	
Fresh Fruits and Vegetables	$9,406,278	$9,207,554	*$198,724	*2.16%
Live Stock	2,508,237	2,568,370	60,133	2.33%
Furniture (New)	2,144,957	2,138,244	*6,713	*0.31%
Grain	1,658,979	1,697,117	38,138	2.25%
Machinery and Hardware	1,474,639	1,603,678	129,039	8.05%
Coal and Coke	1,181,333	1,539,086	357,753	23.24%
Autos—Trucks & Accessories	1,292,452	1,382,272	89,820	6.50%
Clothing, Dry Goods & Notions	1,009,332	1,204,469	195,137	16.20%
Glass—Glassware—Crockery	1,163,184	1,271,668	108,484	8.53%
Flour Mill Products	1,099,309	977,728	*121,581	*12.44%
Meats, Packinghouse Products	757,619	819,332	61,713	7.53%
All Other Iron & Steel Articles	699,134	892,105	192,971	21.63%
Stoves—Furnaces, Etc.	742,276	829,667	87,391	10.53%
Eggs	442,988	537,887	94,899	17.64%
Groceries	417,398	496,766	79,378	15.98%
Tobacco—Cigarettes, Etc.	494,881	521,028	26,147	5.02%
Household Goods	454,809	534,030	79,221	14.83%
Sugar	461,059	456,232	*4,827	*1.06%
Boots and Shoes	155,984	195,486	39,522	20.21%

all loss and damage shows the magnitude of the claims due to damage and rough handling. Claims paid on fresh fruits and vegetables in 1922 because of damage and rough handling amounted to $2,799,805 and increased to $5,327,388 in 1928 or 90.3 per cent while the claims paid on all commodities decreased 24 per cent and the total claims paid on all fruits and vegetables increased only 9.9 per cent. This 90.3 per cent is again emphasized when contrasted with the damage and rough handling of all commodities, the payments of which increased only 11.9 per cent. While the damage and rough handling of fresh fruits and vegetables increased 90.3 per cent, delay to these commodities decreased 27 per cent and temperature failures decreased 42.9 per cent.



Lettuce Crates Too Weak to Support Weight Above When Load Shifted

The claims paid per car on some of the fresh fruits and vegetables reflect the necessity of further prevention work. During the first six months of 1928, the claim paid per car of tomatoes was $20.18; of grapes, $15.90; of watermelons, $10.10; of peaches, $9.92; of onions, $7.15; of oranges, $5.48; of cantaloupes, $3.65; and of white potatoes, $2.95. Since these averages are based on the movement during the first six months of the year, they do not portray the conditions existing during the peak movements of fresh fruits and vegetables which occur during the latter part of the year. The average claim per car for the year, therefore, is much larger.

Safety on Southern Pacific in Texas and Louisiana

FIGURES compiled by the Southern Pacific Lines in Texas and Louisiana show a remarkable contrast between 1928 and 1912 when safety work was undertaken among its train service employees on an organized basis. In 1912, the first year for which such a record was kept, one casualty occurred among train service employees for each 20,595 locomotive miles run and in 1916 one casualty occurred among industrial employees for each 25,546 hours worked while in 1928 one casualty occurred among train service employees for each 126,939 locomotive miles run, and among industrial employees for each 135,274 man hours worked. In other words, casualties in both of these departments were reduced to approximately one-sixth of the number which would have occurred if no improvement had been made over the record of 15 years ago.

During 1928, there were 194 casualties to employees in train service, and 332 casualties among all other classes of employees. If the safety standard of 15 years ago had been still in effect, there would have been approximately 1,200 casualties among train service employees, and approximately 1,800 casualties among employees in all other classes.

During 1928, passenger trains of the Southern Pacific Lines in Texas and Louisiana operated a total of 7,494,437 miles and carried 2,217,736 persons. There was not a single fatality among the passengers carried as a result of train accidents, again repeating the record of the last three years.

The marked progress in reducing accidents and improving the safety record has been brought about in two ways: First, and most important, by the thorough cooperation of the management and employees in all units of service, with the firm determination to reduce accidents to a minimum; second, by constantly improving working conditions, including tools, equipment, facilities and methods.

Reports of accidents occurring on these lines during 1928 in which vehicles were involved, showed a total of 316 accidents as compared with 271 in 1927. A total of 237 passenger automobiles, 75 trucks and 4 wagons were involved. In 188 incidents the train struck the automobile while in 128 the automobile struck the train.

This is in contrast to 1927 when the figures were 195 and 76 respectively. The 316 accidents in 1928 resulted in 28 fatalities and 71 injuries, as compared with 41 fatalities and 59 injuries in 1927.

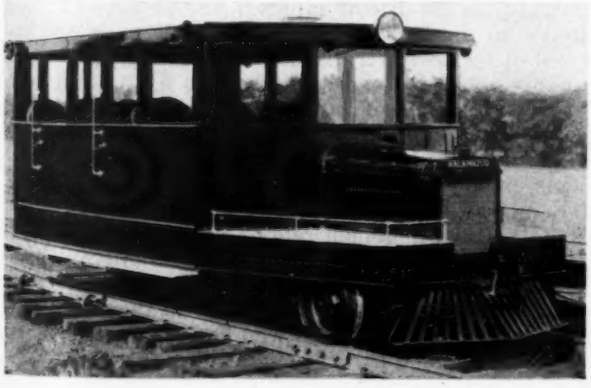
Of the crossings on which collisions occurred, 62 were protected by flagmen, gates or signals. Switching locomotives figured in 106 accidents and road locomotives and trains in 210. Of the total contacts, 100 took place between 6 p.m. and 6 a.m. and 216 between 6 a.m. and 6 p.m. In 43 instances, locomotives were preceded by cars.

Kalamazoo Builds De Luxe Inspection Car

AN enclosed inspection car which will carry a party of 12 comfortably and which has three speeds in each direction, has been placed on the market by the Kalamazoo Railway Supply Company, Kalamazoo, Mich., which has designated it the No. 55-12 De Luxe.

The construction of the body is the same as is used for motor coaches and the exterior is finished in a two-tone high-grade enamel with nickel-plated hardware and trimmings, while the interior is finished in Spanish leather, with battleship linoleum for a floor covering. The seats, of the motor-coach type, are made of wicker and are upholstered with leather, with air cushions. The windows, which are plate glass, are large and can be raised or lowered to any desired position. The car is provided with an exhaust heater and has full electric equipment.

Power is supplied by a six-cylinder motor developing 55 hp., and a heavy-duty motor-coach transmission, in connection with a Kalamazoo reverse transmission, makes three speeds available in each direction, a four-wheel drive being provided by heavy roller chains to both the front and rear axles. The car is equipped with a dual braking system, one set of brakes, with replaceable cast-iron brake shoes operating on all four wheels,



The Kalamazoo De Luxe Inspection Car

while a Lockheed hydraulic band-type brake is also provided. The trucks are mounted on elliptical springs, while the 20-in. wheels are of the rubber-cushion type, with forged steel tires, to insure comfortable riding.

The use of this car provides for inspection trips at much less expense than when a train is used, while it permits inspections when weather conditions would hamper or prevent progress with open or semi-enclosed cars. The three-speed transmission permits slow running when desired, with high speeds where close inspection is not required.

Rail Line Reaches Hudson Bay

TRACK laying on the Hudson Bay Railway, which will connect western Canada with tidewater, reached the terminus on Hudson Bay, Fort Churchill, last week. Construction of the last section of this line has proceeded during the winter, ties and rails being laid on the snow and ice, and the fill and ballast will be put in during the summer when the ice melts. This method of construction was adopted in order to expedite the work which with ordinary construction methods could have been done only during the summer months. In addition, the completion of the rail line to Fort Churchill, even if temporary, will permit the movement of large quantities of construction material into the terminal before the spring thaw sets in, which will enable port development work to be carried on during the summer months. It is not expected that the Hudson Bay line will be opened to commercial traffic before the latter part of the summer or early fall.

The Hudson Bay line, which is being built and operated by the Canadian National on behalf of the government, connects with the Winnipeg-Prince Albert line of the Canadian National at Hudson Bay Junction in Eastern Saskatchewan and runs thence northeasterly through The Pas, Man., to Fort Churchill, which is located on the west shore near the southern end of Hudson Bay. Construction on this line north and east from The Pas, Man., was started in 1911. Work was discontinued during the war and undertaken again in 1918, after which it slowly proceeded. In August, 1927, following the report of an English consulting engineer, Frederick Palmer, to the Canadian government, the terminus was changed from Port Nelson to Fort Churchill and construction activity has been pushed. The distance from Hudson Bay Junction to Fort Churchill is approximately 600 miles. Hudson Bay Junction is 379 miles northwest of Winnipeg.

The construction of this line, originally conceived as a shorter route for Canadian grain to Europe, was severely criticised in many quarters. The practicability of commercial navigation of Hudson Bay during a short season of navigation was questioned and the prospects of this gateway ever being largely used as a grain route were doubted. On the other hand, since construction was started, several important mining developments have been undertaken along the route and others are in prospect. It is believed that considerable paying traffic may, therefore, be developed regardless of the utility of the line for the transportation of export grain.

REPEAL of the Missouri Public Service Commission Act, abolishing the commission, is called for by a bill which has been introduced in the Missouri legislature by Representative Huber of St. Louis.

WASHINGTON UNIVERSITY, St. Louis, Mo., through Professor J. L. Van Ornum, announces the offer of a fellowship in civil engineering, for the investigation of certain physical and mechanical properties of timber. This fellowship is open to graduates of recognized engineering schools who have had experience in technical research. It may be extended to two years. The stipend is $1000 for the academic year and is made in cooperation with the American Creosoting Company.

Pennsylvania Employees Save Money

Portion of salary invested with Provident and Loan Association makes larger pensions possible

A TOTAL of 72,224 savings depositors, 1,230 pension depositors and 12,928 security purchasers, or a total of 86,382, and assets of $9,499,303 indicate the magnitude of the operations of the Pennsylvania's Provident and Loan Association. This association was organized on July 1, 1923, in response to many requests received from employees for additional facilities whereby they could safely and conveniently accumulate and invest part of their wages or salaries. While its work has the approval and encouragement of the management, it represents a voluntary and wholly independent organization of the officers and employees, all of whom are eligible for membership.

It began by taking over the activities of the company's previously existing Employee Saving Fund, which had been established on the lines east of Pittsburgh in 1888, and on the western lines in 1903.

The purposes of the association are:

1. To provide a safe and convenient means by which officers and employees who so desire, may systematically save money, and use such savings or other available funds, in whole or part, for any of the following purposes:
   (a) As a saving fund deposit with the association, upon which suitable interest will be allowed (the present rate of interest to depositors is four per cent per annum);
   (b) In the purchase, at the lowest feasible cost, of increased pensions of a character best fitted to their needs;
   (c) In the purchase for investment, of stocks, bonds, equipment trust certificates, or other securities of the Pennsylvania Railroad Company, or of any company in the Pennsylvania Railroad System.
2. To afford a means by which its members may borrow money at reasonable rates of interest, and on easy terms of repayment, for the purpose of acquiring homes.
3. In cases of emergency, to loan to members of the association on their own security, moderate sums for immediate use at reasonable rates of interest.

The affairs of the association are managed by a board of 36 trustees, 18 of whom are appointed by the management and 18 selected by the members. The president of the association is the vice-president in charge of personnel of the system. The other officers, who are not members of the board of trustees, are the superintendent of the relief department, the treasurer and the comptroller of the Pennsylvania, who act as secretary, treasurer, and auditor, respectively of the association.

The president of the association is the executive head, and presides at all meetings of the board of trustees. The secretary has general charge of all business pertaining to the association. The treasurer acts as custodian of all funds, securities, and other assets of the association, and is covered by bond. The company assumes responsibility for the safe keeping of the funds, securities the other assets of the association, allows interest on monthly cash balances left with the company, and also pays the ordinary operating expenses of the association, and supplies the necessary facilities for conducting the business of the association at various points on the system.

Any officer or employee in the service may apply for membership. Membership terminates when the member ceases to be employed by the Pennsylvania, and any amount due the member becomes payable. A member wishing to establish a savings account authorizes the association to deduct a certain amount from his wages or salary each month. The amount is credited to his account. Authorized deductions may be increased or decreased from time to time. A member may also deposit a lump sum. Interest at the rate of four per cent per annum is allowed on all savings accounts, and is credited to the member's account at the end of each fiscal year, when it becomes a part of the principal. A member may withdraw the whole or any portion of his savings account after first giving a few days' notice.

Any member may apply to the association for the purchase of a pension that is to be effective upon retirement from active service under the rules of the company. This pension is in addition to that granted by the company. The monthly pavment or contribution required of members is $1 or multiples thereof, and may be paid either in cash or by deduction from wages. The amount of pension is payable: (1.) In one sum equal to the total of the monthly payments made by the member, with interest compounded at four per cent per annum; or (2.) In monthly pension payments, with the proviso that in case of death before the full amount of payments made by the member with interest compounded at four per cent per annum, has been returned, the balance will be paid to a designated beneficiary.

The association grants mortgage loans to assist members in the purchase of homes. The real estate department of the Pennsylvania submits a valuation of the property offered as security before the association makes a loan. At the present time, loans are not granted in excess of 60 per cent of the market value of the property offered as security. Loans must be consummated within 90 days from the date of approval, and no money is paid directly to the borrower. The secretary, with the approval of the borrower, handles the transaction.

Every applicant for a loan provides life insurance to cover the amount of his indebtedness, and keeps the property, and improvements thereon, offered as security, fully insured against fire. He also pays all taxes, assessments, public dues and charges 'evied on the property. The money loaned and interest thereon are repaid monthly at the minimum rate of $1 for each $100 borrowed, until the principal of the loan and interest thereon have been paid.

Any adult employee who has been in the service for three consecutive years, and who has been a member of the association and participated in either the saving, pension, or purchase-of-securities feature, for a period of not less than six months, may borrow sums aggregating not more than one month's pay to meet personal or family obligations. The money loaned and interest thereon at the rate of six per cent per annum, are paid back monthly at a minimum rate of $1 for each $10 borrowed.

Members may also purchase Pennsylvania securities on the monthly installment plan, or for cash. All dividends or interest received by the association on securities purchased by a member, unless otherwise arranged, are credited to his account as part of his payment. If desired, the association will hold the paid-up security for

safekeeping, and all dividends or interest will be credited to the employee's savings account, or paid directly to him in cash.

The financial statement of the association on December 31, 1928, showed 72,224 savings depositors, 1,230 pension depositors, and 12,928 security purchasers, or a total of 86,382. The assets totaled $9,499,303, of which $5,874,681 was in United States government bonds and other bonds; $512,734 represented cash on deposit with the treasurer, $70,798 was due by employees on account of securities purchased, $170,520 was emergency loans, and $2,847,011 was building loans. The liabilities include stock purchased for members, $47,626; outstanding orders, $105,260; savings due depositors, $8,843,114; pensions due depositors, $153,342; and surplus and reserve, $349,960.

November Train Accidents Investigated by I. C. C.

TRAIN accidents investigated by the Bureau of Safety, Interstate Commerce Commission, in November, 1928, included six collisions and two derailments. Following are abstracts of the reports made by the Bureau on these accidents:

Ogden Union, Ogden, Utah, November 1, 1:35 a. m.—Two yard engines pushing cars, one moving east and the other west, collided, at low speed, and the conductor of one of the trains was killed; one other employee was injured. The report puts blame on both trains, holding that the men on the tops of cars were not keeping a proper lookout. On one of the trains there were two men on the top of the leading car, and all three claimed not to have seen the lights carried by the men on the opposing train, but the inspector holds that the lights could and should have been seen. Two of the men had had only 11 weeks' experience, while the third one had not had proper rest during his off-duty period. It was found that, habitually, in this yard, short trains of cars were pushed a distance of three-fourths of a mile, in which distance a railroad crossing had to be passed; and it is suggested that the engine might reasonably have been run around the cars so as to pull instead of push them.

Chicago, Rock Island & Pacific, Chicago, Ill., November 3, 2:22 a. m.—This collision occurred on what is known as the South Chicago line which extends eastward about five miles from Gresham, Ill., and is used by the Baltimore & Ohio and the Pere Marquette and also by locomotives of ten other companies. The whole of the line is classed as within yard limits and all trains are operated under yard rules. No train-sheet record is kept of movements over this line and no written train orders are issued. The maximum speed prescribed for passenger trains is 45 miles an hour on straight lines and 30 miles an hour on curves; freight trains 30 miles and 20 miles an hour. An eastbound freight train of the Rock Island, consisting of a locomotive, 27 cars and a caboose, which had been unexpectedly stopped and had been standing about 15 or 20 minutes was run into at the rear by a following train of the Baltimore & Ohio, consisting of four express cars loaded with silk and one coach used as a caboose. Four cars in the leading train were badly damaged and a switch foreman and a switchman on this train were killed. The engineman of the Baltimore & Ohio train failed to observe that an automatic signal indication was not displayed for his train, and did not stop, as he should have done where a signal was missing. The fireman also is held at fault for calling the indication of this signal as yellow ("proceed with caution"). Also, the engineman was blameworthy for moving within yard limits at excessive speed. The engineman's explanation was that he missed the signal location entirely. The inspector believes that the fireman, in calling "yellow," had seen another signal, located nearby on the Chicago & Western Indiana. The fireman claimed to have seen both the C. & W. I. signal and the one which gave indications for his own line, but the inspector believes he is mistaken. The men in charge of the silk train claimed that their train was virtually a first-class train and, therefore, could run at passenger speed. In this connection, the report advises the officers of the Baltimore & Ohio that if they wish to run such a train at high speed, it should be made a section of a regular train instead of being run as an extra. The cause of the extinguishment of the signal light was improper operation of a track relay, believed to have been due to dirt between the back contacts, or high electrical resistance. The relay was made in 1917 and overhauled in March, 1926. When it was tested after the collision it was found to be in normal operating condition.

Illinois Central, Centralia, Ill., November 7, 3:34 a. m.—Northbound passenger train No. 8, running past caution and stop signals at the approach to the crossing of the Chicago, Burlington & Quincy, was derailed at a lifting-type derail, 746 ft. south of the crossing, and the locomotive was overturned. The speed was between 30 and 50 miles an hour and the engine and first four cars were badly damaged. The engineman and fireman were killed and seven persons were injured. The tail end of a Burlington freight train was passing over the crossing when the derailment occurred. The inspector is unable to decide why the signal indications were not observed. It is believed that the brakes were not applied. There was evidence to the effect that the engineman and fireman may have been disabled as the result of the breaking of a steam pipe in the cab, but there is no conclusive information as to this. The engineman had been ill at a comparatively recent date. On this district of the road there are 31 scheduled trains daily, as well as extras; and the report says that the road should seriously consider whether the automatic train control system, now in use north of Centralia, should not be extended southward.

Gulf, Colorado & Santa Fe, Texas City Junction, Tex., November 7, 7:05 a. m.—Northbound freight, extra 1907, moving at about 20 miles an hour, ran into a preceding freight, extra 944, standing in the yard, making a bad wreck and overturning the locomotive. The fireman of 1907 was killed and two other employees were injured. The blame is placed primarily on the engineman of 1907 for not properly controlling speed within yard limits. The engineman said that he was lost in the fog; but even after making a 10-lb. brake-pipe reduction he was running 18 miles an hour or faster when, because of the fog, he should have been running with extreme caution. He had run too fast for more than one mile within the yard limits, thus violating Rule 93; and he knew that 944 was only a short distance ahead of him. The conductor had noted the excessive speed and applied the brakes from the caboose, but not soon enough; and he is blamed for working at his desk instead of paying proper attention to the operation of his train. Also, the front end brakeman, if he had been alert, could have reminded the engineman as to their location. The standing train consisted of 81

cars and a caboose and the conductor, standing on the ground, near the front end, heard 1907 approaching, apparently traveling at high speed; he took out his watch and waited to hear the crash, but did not hear the sound, his first knowledge of the collision coming from the sight of the car wheels near the head end of the train moving ahead a few inches.

Atlantic Coast Line, Aulander, N. C., November 7, 5:37 a. m.—Northbound passenger train No. 42 moving at about 40 miles an hour, ran over a misplaced facing point switch and the locomotive was overturned. Several cars in the train and three freight cars on a spur track were badly damaged and the engineman was killed. Three passengers and one employee were injured. One of the points of the switch had been knocked out of position by a brake shoe which had become wedged between the point and the stock rail. The switch is of the Ramapo automatic type which, when trailed through in the wrong position, is forced to complete its movement. The spindle is held by springs requiring a pressure of 2000 lb. on the rod to cause automatic operation and when the spindle has been turned part way against the pressure of the springs, the springs then assist in completing the movement; and it is believed that the driving wheels of the locomotive passed into the side track without being derailed. The inspector did not find out what car the brake shoe had come from.

Louisville & Nashville, Leewood, Tenn., November 11.—Southbound passenger train No. 101 ran over a misplaced switch and collided with a switching freight, while traveling at 30 miles an hour or faster; the engineman of the passenger train was killed and six passengers and five employees were injured. The switching train had moved a long distance from the main line, leaving the switch open, expecting soon to come back to the same point; and this movement was made when the passenger train was due, on the mistaken assurance, from the yardmaster, that all trains due had arrived. The yardmaster should have procured a copy of the train order showing that the passenger train was one hour late and should have delivered this to the yard crew, but he trusted to his memory and forgot that the train had not passed. The loose practice discovered in connection with this switching movement was found to have been more or less general and this "clear violation of the rules should have been corrected by the yardmasters". The engineman of the passenger train also is at fault for entering the yard at about 50 miles an hour, whereas Rule 93 requires all trains to approach under control. An order had recently been issued calling attention to the fact that Rule 93 was not being complied with but, says the report, the issuance of instructions and notices is not alone sufficient; effort should be made to know that instructions are being enforced and obeyed; "it is strongly recommended that the officers of the road take energetic steps toward improving their methods of supervision***."

Norfolk & Western, Fries Junction, Va., November 16.—Collision between eastbound freight No. 78, consisting of one box car and a caboose, hauled by locomotive No. 7, and westbound passenger train No. 57 (four cars) moving backward. Each train was moving about 15 miles an hour and the leading car in the passenger train, a wooden coach, was completely "telescoped" and the two coaches were destroyed. Two passengers and the brakeman of the passenger train were killed and four passengers and four employees were injured. These trains, like others which regularly carry on the traffic of the Fries branch, on which the collision occurred, are regular trains of the main line of the Radford division, and run the 5½ miles from Fries Junction to Fries without change in make-up, returning immediately to the main line. The passenger train (being pushed) had just started from the junction for Fries and the freight was coming from Fries. Trains leaving Fries receive clearance cards, which the agent issues on his own authority; or, when necessary, permissive cards which are not issued except with the approval of the train dispatcher. The report finds that the freight was on the time of the passenger train without protection, and that the passenger train had departed from Fries Junction three minutes ahead of time. It is clear, says the report, that No. 78 attempted to run to Fries Junction when there was not time to do so, and clear the main track according to rule. At the same time, if the pasesnger train had not been ahead of time, it is believed the collision would not have occurred. The investigation disclosed loose practices in registering and in other matters. A passenger had taken the place of the brakeman on the rear platform of the passenger train, taking charge of the back-up hose and assumed the responsibilities of keeping a lookout on the track ahead.

Boston & Maine, Lowell, Mass., November 19.—Northbound passenger train No. 9, moving at good speed collided with southbound passenger train No. 10 which, because of repair work in progress on the southbound track, was traveling a short distance on the northbound track. Three cars in No. 10 were overturned and one of them was demolished. A brakeman of No. 10 was killed and 25 passengers and seven employees were injured. The northbound train had run past a signal which should have stopped it before reaching the crossover by which No. 10 was returning to its own track, and the engineman is held responsible. This engineman said that he at first read the signal as indicating "proceed"; and that he applied the brakes 1000 ft. before reaching the signal, but the inspector finds evidence discrediting both of the engineman's statements. The fireman of No. 9 was injured, in the collision, to such an extent that no statement was obtained from him by the investigators.

A SOLARIUM CAR—that is to say, a car fitted with a special health-giving sun room—will be a feature of the Trans-Canada Limited trains of the Canadian Pacific the coming summer.

* * *

The Central of New Jersey's "Blue Comet" at Jersey City

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

The Chesapeake and Potomac Country, by Oliver Martin. Illustrations by E. L. Florance, Jr. A most interesting book on Washington and her neighbors in Maryland, Virginia and West Virginia. Railroad points of note mentioned are Potomac Yard, p. 63, Locust Point, Canton and Sparrows Point, p. 77-79, Cumberland, p. 135-136, Hampton Roads, p. 141, Richmond, p. 187-188, the lines in the Shenandoah Valley, p. 234, 237-240. "To Charleston on the C. & O." (in the daytime), p. 246-258, "Three Cities on the Ohio" p. 259-276, and "Wheeling to Washington," p. 277-294. 328 p. Pub. by the Chesapeake & Potomac Telephone Co., Washington, D. C., $1.00.

The Desert Road to Turkestan, by Owen Lattimore. Chapter I discusses one phase of the transport of carpet wool, while the whole journey is more or less the odd result of a car shortage in China. Maps. 373 p. Pub. by Little, Brown & Co., Boston, Mass., $4.

The Law and Theory of Railroad Rates, by Kalyan C. Srinivasan. The author is First Secretary, Railway Rates Advisory Committee, India. American procedure and practice is indexed under the heading "American." The comparisons and contrasts with those of other countries may be of interest. 504 p. Pub. by B. G. Paul & Co., Madras, India.

Periodical Articles

Economical Operation of the 3,000-Volt Direct-Current Electrification of the Paulista Railway, by Guy Bellows. "The latest operating statistics, made available through the courtesy of the railway company, are furnished in the following article." General Electric Review, April 1929, p. 224-229.

Looking Ahead in Transportation—Co-ördination of Trains, Motor Cars, and Airplanes, by General W. W. Atterbury. Illustrations and map. Review of Reviews, April 1929, p. 59-62.

The Railroad as a Neighbor, by Paul Shoup. "Although it cannot borrow a bit of sugar for the breakfast coffee or drop in for an evening of bridge, the Southern Pacific is a neighbor of 14 million persons in the eight states through which it operates its 16,500 miles of line." p. 98. Nation's Business, April 1929, p. 98, 102.

Virginia—a Commonwealth That Has Come Back, by William J. Showalter. The railroad's part in the "come-back" is emphasized, and the collectors of unusual railroad pictures will like "Acres of black diamonds" and the "Lambert Point Coal Piers" on p. 455-456, "Railroad tiers at Richmond" p. 461 and the weird "Amid the barren hills of old Virginia" p. 457, an airplane view of the Pocahontas coal fields. National Geographic Magazine, April 1929, p. 403-472.

Your Inventory and the Railroads—Some examples of Money-Saving Cooperation, by M. J. Gormley. Executives Service Bulletin, March 1929, p. 1-2.

TWO VACANCIES in the Frank Thomson scholarships, maintained for the benefit of sons of employees of the Pennsylvania will be open in June. The College Entrance Examination Board, 431 West 117th Street, New York City, will conduct the examinations. Notice is given that, as this benefaction exists for the benefit of the sons of employees and deceased employees, applications from students already in college will be subject to the limitation that they must attain a mark of at least 50 per cent in all subjects in which they are examined.

Looking Backward

Fifty Years Ago

Some 40 roadmasters met at Boston on March 25 to form a permanent organization to be known as the International Roadmasters' Association. About 75 letters were received from roadmasters and assistant roadmasters on western roads who were not able to be at the meeting but who assured the association of their support.—*Railroad Gazette,* April 4, 1879.

With the completion of its subsidiary, the Kansas City, St. Louis & Chicago, late in March, between Mexico, Mo., and Kansas City, the Chicago & Alton is now in possession of an independent line between Chicago and the Missouri river and St. Louis and the Missouri river. Its route between Chicago and Kansas City, 487½ miles, is also the shortest line between those cities.—*Railway Age,* April 3, 1879.

The Union Pacific has served upon Henry S. McComb a summons in the action to have him refund the sums of money which it is alleged he received as his share of the profits of the Credit Mobilier of America, which constructed the road. The specific allegations are that McComb was concerned in the Hoxie contract for building 247 miles west from Omaha and in the subsequent contracts for building 805 miles more, all of which were assigned to trustees, of whom McComb was one. It is claimed that large sums were paid on the contracts at a time when the treasurer and a number of directors of the railroad were also stockholders of the Credit Mobilier. —*Railroad Gazette,* April 4, 1879.

Twenty-Five Years Ago

E. N. Brown, second vice-president and general manager of the Mexican National, has been selected as president of the National of Mexico to take effect when the consolidation of the National of Mexico, the Mexican International and the Interoceanic is completed.—*Railway Age,* April 8, 1904.

Government railway ownership in Canada continues to prove an expensive luxury. While the working expenses of the Intercolonial [now part of the Canadian National] were only $16,000 less than the total revenue in 1903, the government paid out of the national treasury on account of the road an additional sum of $2,254,266, partly for terminal improvements but much of it for work that a non-government railway would have charged to operating expenses.—*Railway Age,* April 6, 1904.

The United States Supreme Court has sustained the investigation power of the Interstate Commerce Commission in a very conclusive way. In what is known as the "anthracite coal case", an investigation into the relations of the anthracite coal carrying roads begun by the Commission at the instance of William Randolph Hearst of New York with a view to ascertaining whether there were any violations of the anti-trust law, the court held that the railroads must produce the traffic contracts between themselves and the coal companies which are principally owned by the railroads.—*Railway and Engineering Review,* April 9, 1904.

Ten Years Ago

The seventy-first General Assembly of Indiana, after a four-year educational campaign carried on by the passenger traffic officers of the Indiana lines, has repealed the two-cent passenger fare law.—*Railway Age,* April 4, 1919.

The volume of traffic handled by the railways in 1918 shows an increase, compared with the test period on which the standard return is based, of more than one-fifth in ton miles and one-fourth in passenger miles. This freight performance was the greatest in the railway history of the United States, surpassing even the excellent performance of 1917, nine months of which was accomplished under the supervision of the Railroads' War Board.—*Railway Age,* April 4, 1919.

Odds and Ends of Railroading

Concerning Us

You may imagine our surprise when we read the following headline in a St. Paul newspaper: "Near East to Shun *Railway Age*." Wondering what we had done to arouse the animosity of the Near East, we read on and found, from the following paragraph, that nothing personal was intended:

"The much-heralded age of motor and air transportation has arrived with such rapidity in the Near East that there probably will be no age of railroads."

Makes Musical Instruments from Wood

A peculiar hobby is that of J. E. Little, a mason on the Maryland Division of the Pennsylvania, who carves musical instruments out of wood during his spare moments at home in the evenings. He has constructed cornets, violins and many other types of instruments, and not content with that alone, has become a clever entertainer, being able to imitate almost any musical instrument with his mouth. He takes part in many benefit performances in his vicinity.

Friendly Enemies

The 59th street machine shop of the Pennsylvania at Chicago is the scene of another of the individual after-the-war armistices. Alphonso Hilbert, laborer, was in the thick of the fighting on the German side, eventually being so badly wounded as to be invalided home, where he remained until after the war, when he came to America. His particular pal is Stanley Lucas, car repairman at the same shop. As a private in the 319th Infantry, U. S. A., Lucas took part in several major offensives in the closing days of the war.

"Limited Mail" Producer Dies

Elmer E. Vance, famous 35 years ago as the author and producer of "The Limited Mail" died recently in Newark, Ohio. This play was the first to use a mechanical train on the stage. It was while employed as a train dispatcher for the Baltimore & Ohio that he conceived and wrote "The Limited Mail" and the scenes are laid at the station of Hemlock, along the line of the Hocking Valley near Athens, Ohio. The receipts from this play, which was produced in every large city in the country, made him wealthy, but he lost a large portion of his wealth in later theatrical productions.

Clever Ruse of Woman Agent

Miss Ruth Sprague, station agent of the Long Island at Bellaire, L. I., by her quick thought and action, saved her own life and the funds of the railroad. Recently, while Miss Sprague was on duty, a man walked up to the ticket window, pointed a revolver at her and ordered her to open the door. She dropped to the floor in a pretended faint. At the same time she pulled down with her the telephone instrument and called the railroad's police department. As soon as the highwayman heard her conversation he ran away. For her clever and heroic service in this emergency, Miss Sprague has been highly commended by the railroad management.

Station Tower Moved to Cape Cod

One of the four imposing Norman towers which gave to the old "Fitchburg depot" of the Boston & Maine at Boston, a distinction all its own among railroad stations, now stands as a landmark in North Truro, Mass., on Cape Cod. It is situated three miles south of Peaked Hill Bar, and one-half mile south of Highland Light, 300 feet back from the shore. It is now known as Red Top Tower, and is located at the top of a mound 200 feet above sea level. Its top, rising some 55 feet above the foundations, is visible from all the surrounding towns of the Cape district and from ships many miles at sea. Bought by Harry M. Aldrich, a Boston attorney, for his summer place, Red Top, at North Truro, the tower was taken down, a stone at a time, and each stone numbered—260 tons of Fitchburg granite. Taken on flat cars to North Truro, the tower was reassembled. The task required three months.

Prolific Section Foremen

J. H. Walsh, vice-president and general manager of the Quebec Central, directs the attention of this department to the size of section foremen's families on his line. F. L. Labbe, section foreman at Courcelles, Que., raised a family of 19 children, of whom 15 are living. Several of the children have married and there are now 38 persons comprising the immediate family. Joseph Nadeau of the Megantic subdivision is the father of 22 children by the same mother, 6 of whom are dead. Four of the remaining 16 children are married and have 12 children, making a total of 28 children and grandchildren. Z. Proulx, of the same subdivision, is the father of 18 children. J. L. Dancose, station agent at St. Evariste, Que., had 17 children, 4 of whom are dead. Of the remaining 13, 5 are graduates of Levis college, 1 is a graduate of the Congregation Notre Dame at Quebec, another of the Sisters of Charity, Levis, Que. Another child is at present a student at Levis college, one girl is in a convent, and the remaining four children are attending the local school at St. Evariste. It seems unlikely that any other railway could dispute the Quebec Central's large family championship, either as to numbers or education, and Joe Nadeau would seem to be the individual champion.

A Problem in Relativity

Travelers in some sections of the United States have much trouble with railroad time, local time and daylight saving time, but their troubles are at least figured in even hours. Passengers of 1887 had their own anguish in travel, as proved by a condensed timetable of the Ohio & Mississippi Railway, in the possession of George S. Seymour, auditor of miscellaneous receipts, of the Pullman Company. Ponder this paragraph and see whether you agree:

"Trains are run by Central Standard Time, which is 1 minute faster than St. Louis time; 22 minutes slower than Cincinnati time and 18 minutes slower than Louisville time."

How could anyone ever arrive on time? Mr. Seymour did some figuring and submitted this report.

"This timetable situation leads to some surprising results. According to it, if you leave Louisville at 8:38 local time, you arrive at Jeffersonville, across the river, at 8:30 Central Standard time—you have saved eight minutes. Assuming that local time was used in all towns near Louisville, you could then leave Jeffersonville at 8:48 and arrive at the next town, Watson, at 8:43. Another five minutes off your age. As it is about 14 miles from Louisville to Watson, it is evident that you have gained 13 minutes by traveling 14 miles. As there are 525,600 minutes in a year, by building and operating 566,800 miles of track within the Louisville local time-zone, a man who took the trip might actually arrive at his destination a year before leaving it.

"As the train above mentioned actually made the 14 miles in 23 minutes, or at the rate of 36 miles per hour, faster running time would speed up the result. We might expect that curves would interfere with attaining the maximum speed, but at an average rate of 50 miles an hour the passenger could reduce the year's journey to 310 days. Therefore, if he continued traveling the remaining 55 days he would become a year and two months younger in a year.

"The possibilities are enormous. We must remember that the rolling stock is gaining youth as well as the passenger. Does it then get in better repair the longer it runs?

"Something tells me there is an error in this calculation, though I don't expect to live long enough to find it."

The Southern Pacific's "Sunset Limited" near Redlands, Cal.

THE NEW BRIDGE of the Chesapeake & Ohio over the Ohio River, between Cincinnati, Ohio, and Covington, Ky., was opened for business on April 3. This bridge is the principal feature of a twelve-million-dollar improvement, including separation of street grades and construction of new tracks in Covington, which has been in progress during the past two years.

THE NORTHERN PACIFIC has granted a wage increase to 5,500 shopmen on its lines which, beginning April 1, will effect an annual increase in payrolls of about $500,000. The increases were distributed as follows: Mechanics receiving more than 74 cents an hour, 5 cents an hour; mechanics receiving less than 74 cents an hour, 4 cents; car repairers and inspectors with more than two years experience, 4 cents an hour; with less than two years' experience, 3 cents an hour; helpers and helper apprentices, 3 cents an hour; regular apprentices, 2 cents an hour; miscellaneous laborers classified as labor foremen, transfer table operators, chauffeurs, fire builders, fire cleaners and boss wipers, 1 cent an hour; stationary engineers, $7.50 per month; stationary firemen, $5. No increase was given to coach cleaners and laborers.

Railway Magazine Editors

The American Railway Magazine Editors' Association, Holcombe Parkes, president, will hold its annual convention at the Cavalier Hotel, Virginia Beach, Va., on May 1, 2 and 3. The secretary of the association is Page N. Price (N. & W.), Roanoke, Va.

Large Exhibit at Air Brake Convention

Present indications point to the largest exhibit of equipment in the history of the Air Brake Association at the Hotel Stevens, Chicago, April 30 to May 3, inclusive, during its 1929 convention. Reports from F. W. Venton, secretary of the Air Brake Appliance Association, indicate that the demand has been so great that it has been necessary to contract for 3,400 sq. ft. of additional space for the exhibit.

The Six-Hour Day

A. F. Whitney, president of the Brotherhood of Railroad Trainmen, and Timothy Shea, assistant president of the Brotherhood of Locomotive Firemen and Enginemen, speaking before a meeting of members of their brotherhoods in Boston on March 31, said that all four of the large train service brotherhoods are now committed to the policy of prosecuting a movement for the six-hour day.

A Fifty-Year Record

The Pittsburgh & Lake Erie last month celebrated its fiftieth anniversary, and in connection with historical notes published, it is stated that during this half century no passenger has been killed on the road in a train accident. This company now operates 231 miles of line and has 268 locomotives. The passenger trains of the company are run about 1,400,000 miles a year.

Transportation Division, A. R. A.

The Transportation Division of the American Railway Association will hold its annual meeting at the Stevens Hotel, Chicago, on May 28 and 29. The first day will be devoted to discussion of car service, per diem, demurrage, storage and freight handling service. On the second day there will be addresses, and the annual reports of the standing committees.

G. W. Covert, secretary, 431 South Dearborn street, Chicago, is to issue a program, to be circulated in advance at the meeting.

Railway Executives Will Speak at Foreign Trade Convention

Secretary of Commerce, Robert P. Lamont, former president of the American Steel Foundries, Lawrence A. Downs, president, Illinois Central, and Daniel Willard president, Baltimore & Ohio, will be among the speakers at the Sixteenth National Foreign Trade Convention which opens at Baltimore April 17.

Mr. Lamont will discuss "World Trade, To-day and To-morrow", Mr. Downs will speak on "World Trade Between the Americas" and Mr. Willard on "The Railroads and Foreign Trade."

The Drocourt Collision—A Correction

The report in the *Railway Age* of March 30, page 753, giving an account of the collision of Canadian National passenger trains at Drocourt, Ont., on March 20, was incorrect in describing the colonist car, in which passengers were killed, as a wooden car. The colonist car was a steel car, built in 1919, with nothing combustible in it except the interior fittings; and the stove in this car, used by passengers to warm their food, was of a type not essentially differing from those used in dining cars.

The engineman, the fireman and the rear brakeman of Canadian National train No. 3, which was in the collision at Drocourt, Ont., on March 20, were on March 26th brought into police court at Parry Sound and charged with manslaughter. These three were the only surviving members of the crew of that train. The men were released on bail, $10,000 each for the engineman and fireman and $5,000 for the brakeman.

Senate Committee to Have New Chairman

Senator James E. Watson, of Indiana, has made known his decision to relinquish his chairmanship of the Senate committee on interstate commerce, which he has held for several years, because of his selection as Republican leader of the Senate. Senator James D. Couzens, of Michigan, the ranking Republican member of the committee, will become chairman if the seniority rule is followed. It is expected that the committee will be organized with the new chairman at the coming special session of Congress. Senator Watson expects to continue as a member of the committee.

Los Angeles Station Case

The Interstate Commerce Commission has filed in the Supreme Court of the United States a petition for a writ of certiorari for the purpose of obtaining a review of the recent decision of the court of appeals of the District of Columbia which held that the commission has power to issue an order requiring the

railroads in Los Angeles, Cal., to construct a union station as desired by the city and the state authorities. The commission issued a report finding that public convenience and necessity would require the construction and that it would not impair the carriers' ability to perform their duties to the public, but that it had no jurisdiction to enter an order.

Signaling Principles and Practices

H. S. Balliet, secretary of the Signal Section, American Railway Association, 30 Vesey street, New York City, announces that there now have been completed and are on sale at his office, six chapters of the comprehensive work on American Railway Signaling Principles and Practices which is being prepared by committees of the Signal Section.

Following are the titles of the six completed chapters—each in a separate pamphlet—with the prices, postpaid; first those to railroad employees and second those to other persons:

Chapter V, Batteries, 20 cents—30 cents.
Chapter VI, Direct Current Relays, 15 cents—25 cents.
Chapter VII, Direct Current Track Circuits, 15 cents—25 cents.
Chapter VIII, Transformers, 15 cents—25 cents.
Chapter X, Alternating Current Relays, 15 cents—25 cents.
Chapter XXIII, Highway Crossing Protection, 10 cents—20 cents.

R. & L. Historical Society

The Railway and Locomotive Historical Society, domiciled at the Harvard Business School, Boston, Mass., has issued a catalogue of the exhibits now displayed in the Society's rooms at the Baker Library. The society has now occupied these rooms about one year and a large amount of material has been gathered. Railroad men and all persons interested in railroad history are invited to visit the rooms. The catalogue groups the exhibits under four heads: Locomotives; time tables, posters and notices; personal; and buildings. Besides this, there follows a long list of unclassified things, and then four lists of smaller objects contained in four cases, A, B, C and D.

The pamphlet contains also a consolidated index of the articles printed in the 17 bulletins which have been issued by the society during the past few years.

Highway Crossing Signals in Canada

The Board of Railway Commissioners for Canada, by an order dated March 12, has re-issued its specifications for signals at highway crossings. Evidently these specifications are not intended to cover all questions which may have to be decided in the case of any particular installation, there being no specific statement as to what will or will not be approved under certain conditions. After prescribing material, dimensions, conditions, etc., as to the post, the bell and a few other details, there is a paragraph requiring that every signal shall be inspected every morning; and be tested by placing a wire across the rails; and if any signal fails to operate, or operates continuously, a flagman must be stationed at such crossing at once. Failure to place a flagman as required will subject the defaulter to a fine of fifty dollars.

Convention of the Air Brake Association

The thirty-sixth annual convention of the Air Brake Association will be held at the Stevens Hotel, Chicago, April 30 and May 1, 2 and 3. The tentative program selected for discussion at this meeting is as follows:

Maintenance of Air Brake Equipment on Gas Rail Cars, by Manhattan Air Brake Club

Report of Committee on Exclusion of Dirt and Moisture from Passenger Brake Cylinders, W. H. Clegg (chief inspector, Canadian National), chairman

Automatic Train Control and Automatic Stop Equipment, by F. H. Nicholson, Union Switch & Signal Company

Car Retarders, by L. Richardson, chief mechanical officer, Boston & Maine

Air Compressor Capacity for Gas-Electric Rail Cars, by M. Purcell (general air brake inspector, Northern Pacific) and C. C. Ferguson (general air brake instructor, Great Northern), North West Air Brake Club

Distributing Valves—Location, Maintenance and Piping, by St. Louis Air Brake Club

Operation and Maintenance of Engineer's Brake Valve, by Central Air Brake Club

Report of Committee on Recommended Practice, H. A. Clark (general air brake inspector, Minneapolis, St. Paul & Sault Ste. Marie), chairman

Report of Committee on What Is the Best Material for Air-Brake and Air-Signal Piping, J. E. Gardiner (general air brake instructor, Boston & Maine), chairman

Report of Committee on Main Reservoirs, W. F. Peck (supervisor air brakes, Baltimore & Ohio), chairman

Slid Flat Wheels in Passenger Train Service—Causes and Remedies, by Pittsburgh Air Brake Club

Further Floods in the South

High water in flooded streams in southeastern Kentucky and northeastern Tennessee, caused by heavy rains on March 22 and 23, caused interruptions in some train service on the Southern, the Tennessee Central, the Louisville & Nashville and the Chesapeake & Ohio. At Harriman, Tenn., and at Oakdale, Tenn., press reports stated that the yards were flooded, with freight cars washed from the tracks. A passenger train on the Southern was marooned by earth slides between Lancing, Tenn., and Oakdale.

Through service on the Tennessee Central was interrupted for three days until March 27. The damage to physical property was slight, except near Harriman, where the west approach to a trestle, was washed by flood water, and the east approach was carried away. While two weeks will be required to restore these approaches, service was not interrupted since it was possible to operate trains over a short detour.

On the Louisville & Nashville, service was interrupted on the line from Richmond, Ky., to McRoberts, and on the lines between Corbin, Ky., and Norton, Va.; also between Corbin and Knoxville, Tenn., including various coal branches in that territory. Damage was sustained by the main line and branches in the vicinity of Harlan, Ky., and Middlesborough, and north of Knoxville. All main lines were repaired and service was restored by March 24, and service was resumed on all branches on March 31, except seven miles of the branch between Harriman and Allingham.

Service on the Pensacola division of the L. & N. (flooded March 14) was restored on March 22, and on the Pensacola & Atlantic division on March 27; and between Georgiana, Ala., and Graceville, Fla., on March 31.

The Chesapeake & Ohio experienced slight interruption to service on March 24, on its line from Catlettsburg, Ky., to Elkhorn City.

Wage Statistics for January

The total number of employees of Class I railways reported to the Interstate Commerce Commission as of the middle of the month of January was 1,594,744, and the total compensation was $236,456,208. Compared with the returns for the corresponding month last year, the summary for January, 1929, shows a decrease in the number of employees of 19,536, or 1.21 per cent. Owing to an increase in the average hourly earnings, the commission's statement says, and the fact that January, 1929, had one more working day than January, 1928, the total compensation increased 2.37 per cent. The number of employees in the maintenance of equipment and stores group shows a decrease of 13,217 as compared with the corresponding month of last year and the transportation group a decrease of 3,049.

With its summary the commission includes the following table comparing average straight time hourly earnings of road, train, and engine service employees as reported by class I railways for the month of January of the years indicated:

Month of January	Conductors		Brakemen & flagmen		Engineers & motormen		Firemen & helpers	
	Passenger (Cents)	Freight (Cents)	Passenger (Cents)	Freight (Cents)	Passenger (Cents)	Freight (Cents)	Passenger (Cents)	Freight (Cents)
UNITED STATES								
1926	89.2	80.2	62.1	63.5	116.5	96.3	90.0	72.7
1927	91.6	82.4	64.0	65.4	116.8	96.4	90.7	72.9
1928	92.8	83.6	64.5	66.3	122.2	99.6	95.6	76.0
1929	95.3	85.8	66.8	67.9	127.2	103.4	99.2	78.2
EASTERN DISTRICT								
1926	87.7	80.0	60.8	62.9	107.3	96.5	83.2	73.1
1927	93.2	84.9	65.1	67.0	108.0	96.6	83.5	73.1
1928	93.9	85.7	65.0	67.6	118.0	103.3	91.4	78.4
1929	94.3	86.0	66.2	67.5	119.3	104.1	93.5	78.9
SOUTHERN DISTRICT								
1926	91.2	79.4	63.8	62.6	123.4	96.7	92.5	72.4
1927	91.2	79.7	63.8	62.8	123.2	96.5	94.7	72.8
1928	96.3	84.2	67.6	66.5	124.4	97.3	100.6	76.6
1929	97.9	85.0	68.8	67.0	133.3	103.4	103.9	77.9
WESTERN DISTRICT								
1926	89.8	81.0	62.9	65.0	124.1	95.7	96.8	72.3
1927	89.9	80.9	62.9	64.8	124.5	96.1	97.3	72.6
1928	90.0	81.0	62.9	64.8	126.2	96.3	98.2	73.0
1929	95.3	85.9	66.9	68.9	134.1	102.6	104.0	77.6

Wage Increases

Four more western railroads have put in effect advanced wage schedules in their mechanical departments as follows: Chicago, Burlington & Quincy, 10,000 employees, advanced from three cents to five cents an hour; estimated addition to annual payroll $1,000,000.

Chicago, Milwaukee, St. Paul & Pacific, 8,500 men, rates same as on the Burlington: estimated yearly total advance $1,000,000.

Kansas City Southern, 800 men; mechanics five cents an hour, helpers and apprentices three cents an hour.

Southern Pacific (Pacific lines) 12,000 employees, two to four cents an hour advance.

Cars and Locomotives On Order

Freight cars on order by the railroads on March, 1 totaled 37,820, compared with 21,726 on the same date last year, and 30216 on February 1 this year according to reports received from the carriers by the Car Service Division, A. R. A.

Of this total 16,989 were box cars, an increase of 10,417 compared with the same date last year. Coal cars, 15,234, show an increase of 7,217 compared with March 1 last year.

Locomotives for which orders had been placed on March 1 this year numbered 291, compared with 171 on the same day in 1928. New and rebuilt freight cars placed in service in the first two months of 1929 totaled 3,566, box cars 1,442; coal 856; flat 589; refrigerator 568, stock 100. New or rebuilt locomotives placed in service in the first two months of 1929 totaled 80. Freight cars or locomotives leased or otherwise acquired are not included in the above figures.

W. U. Settles with L. & N.

In New York City on March 27, the Western Union Telegraph Company paid to the Louisville & Nashville $1,741,000 in a settlement, said to have been a compromise, of the litigation which has been carried on between these two corporations for the last 17 years, concerning the occupancy of the railroad right-of-way by the telegraph company's poles. In 1912, the Western Union became dissatisfied with its contract with this road and started proceedings to obtain a perpetual right-of-way on railroad property for the Western Union poles. This was resisted by the road; and the court proceedings, reported from time to time since that year, have resulted in 44 appeals, seven of which were to the United States Supreme Court. The present settlement covers the rental of railroad premises since the first suit was begun, less $540,000 representing services and facilities rendered by the railroad company during the period in controversy.

It is said that the present settlement provides that the Western Union shall furnish telegraph service to the public at 500 stations on the Louisville & Nashville and that the Western Union wires may be carried on the railroad company's poles.

Missouri Pacific Purchases Airplane

Earning the distinction of being the first railway in the country to own and operate an airplane, the Missouri Pacific has bought a plane from the Travel Air Manufacturing Company, Wichita, Kan., and has placed it at the disposal of E. H. McReynolds, of the staff of President L. W. Baldwin. At the same time, the road appointed Lieut. Linton Roberts as aeronautic engineer, with headquarters at St. Louis. Lieut. Roberts will work with and under the direction of Mr. McReynolds, and the plane will be used in a variety of ways in connection with the development work of Mr. McReynolds' department.

In a statement announcing the purchase of the plane, it was said that it will be used primarily for company business and research. It was flown from Wichita to St. Louis on April 1, and was christened that afternoon at the Lambert-St. Louis airport, where it will be housed.

"There is no question as to the growing importance of air transportation," said Mr. Baldwin. "The Missouri Pacific expects to keep fully abreast of the developments and be prepared to meet the situations of the future with all of the knowledge and facts that can be obtained only in this way." The Missouri Pacific does not contemplate the establishment of any regular passenger air lines or service at the present time.

New York Legislature

Practically all of the legislation affecting motor coach transportation and street railway interests proposed in the New York legislature this year was passed, but many bills are now in the hands of the governor for final disposition. The governor has before him the following:

The Thayer bill (Senate No. 59) amending Section 50-a, Public Service Commission Law, by authorizing the commission to empower railroad or street railroad companies to operate supplemental stage or omnibus routes provided local consents are obtained.

The Thayer bill (Senate No. 483) to include in the definition of "common carrier" persons or corporations engaging in public transportation of persons or property in motor vehicles operating between fixed termini or over regular routes.

The Thayer bill (Senate No. 484) to bring under control of the commission all stages or motor vehicles operating between fixed termini or over regular routes as common carriers.

The Westall bill (Senate No. 520) permitting a railroad corporation and an omnibus corporation owned by it, on approval of commission, to contract for use of their respective routes.

The Thayer bill (Senate No. 566) to allow a corporation holding majority of stock of any railroad or any street railroad to hold entire capital stock of such corporation.

The Thayer bill (Senate No. 567) amending Sec. 141 Railroad Law, by providing that agreements for consolidation of corporations owning continuous lines shall prescribe amount of capital stock and number and par value of shares, etc.

The Thayer bill (Senate No. 986) creating a temporary state commission and appropriating $40,000 to revise the present public service commission law.

Meetings and Conventions

The following list gives names of secretaries, date of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—T. L. Burton, 165 Broadway, New York City. Next meeting, April 30-May 3, 1929, Stevens Hotel, Chicago. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Fred Venton, Crane Company, 836 So. Michigan Blvd., Chicago. Meets with Air Brake Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—J. D. Gowin, 112 W. Adams St., Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 S. Michigan Ave., Chicago. Next meeting, June 25, 1929, Troutdale Inn, Denver, Col.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next annual convention, June 4-7, 1929, St. Regas Hotel, Mexico City.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—F. R. Borger, Supt. Dining Car Service, Monon Route, Chicago. Next meeting October 8-10, Mount Royal Hotel, Montreal, Canada.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—J W. Welsh, 292 Madison Ave., New York. Annual convention, September 28-October 4, 1929, Atlantic City, N. J.

AMERICAN RAILROAD MASTER TINNERS' COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borchert, 202 North Hamlin Ave., Chicago.

AMERICAN RAILWAY ASSOCIATION.—H. J. Forster, 30 Vesey st., New York, N. Y.

Division I.—Operating J. C. Caviston, 30 Vesey St., New York, N. Y.

Freight Station, Section—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago.

Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York.

Protective Section—J. C. Caviston, 30 Vesey St., New York. Annual meeting, April 16-18, 1929, Atlanta-Biltmore Hotel, Atlanta, Ga.

Safety Section.—J. C. Caviston, 30 Vesey St., New York. Annual meeting April 23-25, 1929, Claypool Hotel, Indianapolis, Ind.

Telegraph and Telephone Section.—W. A. Fairbanks, 30 Vesey St., New York. Next convention, Sept. 10-12, 1929, Hotel St. Paul, St. Paul, Minn.

Division II.—Transportation.—G. W. Covert, 431 South Dearborn St., Chicago. Next meeting, May 28-29, 1929, Stevens Hotel, Chicago.

Division III.—Traffic.—J. Gottschalk, 143 Liberty St., New York.

Division IV.—Engineering.—E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Exhibit by National Railway Appliances Association.

Construction and Maintenance Section.—E. H. Fritch.

Electrical Section.—E. H. Fritch.

Signal Section.—H. S. Balliet, 30 Vesey St., New York.

Division V.—Mechanical.—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Annual meeting, June 25-28, 1929, Alexandria Hotel, Los Angeles, Cal.

Equipment Painting Section.—V. R. Hawthorne, 431 South Dearborn St., Chicago. Annual meeting, September 10-12, 1929, Muehlbach Hotel, Kansas City, Mo. Exhibit by Supply Men's Association.

Division VI.—Purchases and Stores.—W. J. Farrell, 30 Vesey St., New York, N. Y. Annual meeting June 24-26, 1929, Palace Hotel, San Francisco.

Division VII.—Freight Claims.—Lewis Pilcher, 431 South Dearborn St., Chicago, Ill. Annual meeting, May 21-24, 1929, Hotel Willard, Washington, D. C.

Division VIII.—Motor Transport.—George M. Campbell, American Railway Association, 30 Vesey St., New York, N. Y.

Car Service Division.—C. A. Buch, 17th and H. Sts., N. W., Washington, D. C.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. Ry., 319 N. Waller Ave., Chicago. Annual convention, October 15-17, 1929, Roosevelt Hotel, New Orleans, La. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION. E. L. Taylor, Asst. to V. P., N. Y., N. H. &

H., New Haven, Conn. Annual meeting, May 22-24, 1929, Lamar Hotel, Houston, Tex.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association, Division IV). E. H. Fritch, 431 South Dearborn St., Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MAGAZINE EDITORS' ASSOCIATION.—Miss Page Nelson Price, Norfolk & Western Magazine, Roanoke, Va. Annual convention, May 1-3, 1929, Cavalier Hotel, Virginia Beach, Va.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M., St. P. & P. R. R., 11402 Calumet Ave., Chicago. Annual convention, September 11-14, 1929, Hotel Sherman, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.—Secretary: C. C. Ziegler, Greenfield Tap & Die Co., 13 So. Clinton St., Chicago.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, Marion B. Richardson, 30 Church St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—H. L. Dawson, 228 N. La Salle St., Chicago. Annual convention, January 28-30, 1930, Seattle, Wash.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, North Pacific Ry., St. Paul, Minn. Next meeting, June 19-21, 1929, Statler Hotel, Detroit, Mich.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 413 C. & N. W. Station, Chicago. Annual meeting, October 22-25, 1929, Hotel Sherman, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, 17th & H Sts., N. W., Washington, D. C.

ASSOCIATION OF RAILWAY SUPPLY MEN.—E. H. Weaver, Westinghouse Air Brake Co., 80 E. Jackson Blvd., Chicago. Meets with International Railway General Foremen's Association.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—Annual exhibit at convention of American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 129 Charon St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—G. K. Oliver, Chicago & Alton, Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, 514 East Eighth St., Los Angeles, Calif. Regular meetings, second Friday of each month, 514 East Eighth St., Los Angeles.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—F. G. Wiegmann, 720 N. 23rd St., East St. Louis, Ill. Meetings first Tuesday of each month, except July and August, Broadview Hotel, East St. Louis, Ill.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—(See Master Car Builders' and Supervisors' Association.)

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 811 Union Central Bldg., Cincinnati, Ohio. Meetings, 2nd Tuesday in February, May, September and November.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, except July, August, September, Hotel Hollenden, Cleveland.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Next meeting, August 20-22, 1929, Fort Shelby Hotel, Detroit, Mich. Exhibit by International Railroad Master Blacksmith's Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—W. A. Champieux, Oxweld Railroad Service Co., 80 E. Jackson Blvd., Chicago.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—L G. Plant, 80 E. Jackson Blvd., Chicago. Next meeting, May 7-10, 1929, Hotel Sherman, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha Ave., Winona, Minn. Annual convention, September 17-20, Chicago.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—S. A. Witt, Detroit Lubricator Co., 820 S. Michigan Blvd., Chicago. Meets with International Railway Fuel Association.

MASTER BOILER MAKER'S ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York. Annual meeting, May 21-24, 1929, Hotel Biltmore, Atlanta, Ga.

MASTER CAR BUILDERS' AND SUPERVISORS' ASSOCIATION.—A. S. Sternberg, Belt Ry. of Chicago, Polk and Dearborn Sts., Chicago. Annual convention, September 4-6, Hotel Sherman, Chicago.

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—Roy M. Edmonds, 1252 Syndicate Trust Bldg., St. Louis, Mo. Annual convention, April 23-25, 1929, Arlington Hotel, Hot Springs, Ark.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 270 Madison Ave., New York. Next convention, August 27-30, 1929, Glacier National Park, Mont.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 1014 South Michigan Ave., Chicago. Exhibit at A. R. E. A. convention.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: A. W. Smallen, C. M. St. P & P., Chicago.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings 2nd Tuesday in month, excepting June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 3rd Friday in month, except June, July, and August.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings 2nd Tuesday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C. Annual meeting, April 30-May 3, Hotel Cleveland, Cleveland, O.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 1406 Packard Bldg., Philadelphia, Pa. Annual meeting, November, 1929, Hotel Stevens, Chicago.

RAILWAY CAR DEPARTMENT OFFICERS' ASSOCIATION. (See Master Car Builders' and Supervisors' Association.)

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Meets with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—F. W. Venton, Crane Co., 836 S. Michigan Ave., Chicago. Meets with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Annual meeting, October 15-17, 1929, Toronto, Canada.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division and Purchases and Stores Division, American Railway Association, June, 1930. (No exhibit at 1929 meeting.)

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A., Division I.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa. Annual meeting, September 18-20, 1929, Royal York Hotel, Toronto, Ont., Canada.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supvr. Road, Baltimore & Ohio, Pittsburgh, Pa. Exhibit by Track Supply Association. Next convention, Sept. 19-21, 1929, Stevens Hotel, Chicago.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack (Rockland Co.), N. Y. Meets with A. R. A. Signal Section.

SOUTHEASTERN CARMEN'S INTERCHANGE ASSOCIATION.—Clyde Kimball, Inman Shops, Atlanta, Ga. Meet semi-annually.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, June, September and November. Ansley Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & A. Ry., Atlanta, Ga.

SUPPLY MEN'S ASSOCIATION.—E. H. Hancock, (Treasurer), Louisville Varnish Co., Louisville, Ky. Meets with A. R. A. Div. V. Equipment Painting Section.

TRACK SUPPLY ASSOCIATION.—L. C. Ryan, Oxweld Railroad Service Co., 80 E. Jackson Blvd., Chicago. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, Gen. Supt., R. S., New York Central, Buffalo, N. Y. Annual meeting, September 24-28, 1929, Hotel Sherman, Chicago. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—W. J. Dickinson, 189 West Madison St., Chicago. Regular meetings, 3rd Monday each month, except June, July and August.

Traffic

The seventh annual meeting of the Associated Traffic Clubs of America will be held on Wednesday and Thursday, April 10 and 11, at Park Central Hotel, Seventh Avenue and 55th street, New York City.

The Interstate Commerce Commission has postponed from April 15 to May 1 the effective date of its recent order directing a reduction in the refrigeration charges on fruits, vegetables, berries and melons from the South.

The National Carloading Corporation, a freight forwarding company, recently commenced operations from New York City. It has established receiving stations in Manhattan, Brooklyn, the Bronx, Long Island City and in Jersey City and Newark, N. J. Consolidated car service is being operated to Chicago, St. Louis and Milwaukee and container service is provided to Cleveland, Buffalo and Pittsburgh.

S. E. Board Reports

The Southeast Shippers' Advisory Board reports that for the ensuing quarter, shippers expect to use 1,022,115 cars, which is practically the same total as last year; but this is the balance between rather numerous increases and decreases in the estimates.

The percentages of the increases expected in ten items are as follows: Citrus fruits 17, coal and coke 5, fresh fruits and vegetables 9; furniture 10, grain and grain products 5, machinery and castings 10, naval stores 10, petroleum and products 6, pulp, paper and products 9, and textiles 14. The following reductions are forecast: Cement 4½ per cent, cotton seed and products 10 per cent, crushed stone, sand and gravel 13½ per cent, fertilizer and materials 12½ per cent, potatoes 10 per cent.

Freight Traffic in January

The freight traffic of Class 1 railroads in January amounted to 39,103,646,000 net ton-miles, according to reports received from the railroads by the Bureau of Railway Economics. Compared with January, 1928, this was an increase of 2,814,852,000 net ton-miles or 7.8 per cent. It was, however, a decrease of 0.3 per cent compared with January, 1927.

In the Eastern district, the increase in January was 12 per cent compared with January, 1928; in the Southern district 2.4 per cent, and in the Western, 4.1 per cent.

The daily average movement per freight car for January was 29.5 miles, the highest average for any January on record and an increase of 1.9 miles over January, 1928. It also was an increase of one mile over that for January, 1927.

The average speed of freight trains in January was 12.9 miles an hour, an increase of 0.3 mile above that for the same period last year and of one mile above January, 1927.

The average load per car in January this year was 27.4 tons, including l.c.l as well as carload freight. This was an increase of 0.2 ton over the average for January, 1928, but a decrease of one ton under January, 1927.

Complaints of Steamship Companies Dismissed

Dismissing compaints filed by steamship companies operating through the Panama canal, the Interstate Commerce Commission, in a report by Commissioner Farrell, has found that the maintenance by the rail carriers of two carload rates and two carload minima and the application thereof to the transportation of canned fruits and vegetables from Pacific coast points of origin to destinations north of the Ohio and Potomac rivers and east of the Missouri river, is not unduly prejudicial against the steamship companies or otherwise in violation of section 3 of the interstate commerce act. The commission also found that the maintenance of blanket carload rates to the same destination territory is not unlawful and that section 500 of the transportation act, declaring it to be the policy of Congress to promote, encourage and develop water transportation, service and facilities, does not impose any duty on the rail carriers. Commissioners Eastman, Campbell, McManamy and Taylor dissented.

Additional Changes in Pennsylvania Passenger Schedules

The Pennsylvania, on April 28, will reduce the running time of its Liberty Limited between Chicago and Washington, D. C., so that 15 min. will be cut from the eastbound schedule and 5 min. from the westbound schedule. The departure time at Chicago will be changed from 1:10 p.m. to 12:30 p.m. and the train will arrive in Washington at 8:05 a.m. instead of 9:00 a.m. as at present. Westbound, the Liberty Limited will leave Washington at 3:15 p.m. instead of 3:10 p.m., as at present, and will arrive in Chicago at 9:00 a.m. on the present schedule. Effective on the same date the eastbound running time of the Washington section of the Manhattan Limited will be cut 55 min. and that of the New York section 10 min. Both sections will leave Chicago on the present schedule, at 10:30 a.m., the Washington section arriving at Baltimore at 6:50 a.m. instead of at 7:45 a.m. and at Washington at 7:55 a.m instead of at 8:50 a.m., and the New York section arriving in that city at 8:25 a.m. instead of at 8:35 a.m.

The eastbound running time of two other trains, the Gotham Limited and the Red Arrow, will be cut a quarter of an hour. The Gotham Limited will leave Chicago at 9:15 p.m., 15 min. later than its present schedule, and the Red Arrow will leave Detroit, Mich., at 4:15 p.m. instead of at 4:01 p.m., 14 min. later than the present schedule, reaching New York at the present time, 9:30 a.m. The time of the Red Arrow to Washington will be reduced 20 min., enabling travelers to reach Washington at 8:45 a.m. instead of at 8:50.

Equipment and Supplies

Locomotives

THE NEW YORK, CHICAGO & ST. LOUIS is inquiring for four 4-6-4 type locomotives.

THE CHICAGO, ROCK ISLAND & PACIFIC is inquiring for five 4-8-2 type locomotives and 25 4-8-4 type locomotives.

THE MANILA RAILROAD has ordered four 4-6-2 type locomotives and two 2-8-2 type locomotives from the Baldwin Locomotive Works.

THE CENTRAL OF NEW JERSEY has ordered five eight-wheel switching locomotives from the Baldwin Locomotive Works. Inquiry for this equipment was reported in the *Railway Age* of March 2.

Freight Cars

THE TENNESSEE COAL, IRON & RAILROAD COMPANY contemplates coming in the market for 12 cars.

THE NEW CORNELIA COPPER COMPANY is inquiring for from 50 to 75 steel concentrate cars of 60 tons' capacity.

THE SOUTHERN PACIFIC has ordered 20 air dump cars of 30 cu. yd. capacity from the Magor Car Corporation.

THE TIMKEN ROLLER BEARING COMPANY has ordered 10 steel gondola cars of 70 tons' capacity from the American Car & Foundry Company.

THE ST. LOUIS-SAN FRANCISCO will build 365 flat bottom coal cars of 55-tons' capacity and 42 ft. in length at its Yale (Tenn.) shops.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS has ordered 150 gondola cars and 50 hopper cars from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of February 16.

THE ANGLO-CHILEAN CONSOLIDATED NITRATE CORPORATION has ordered 100 gondola cars of 30 tons' capacity from the Magor Car Corporation. Inquiry for this equipment was reported in the *Railway Age* of March 30.

Passenger Cars

THE NORTHERN PACIFIC, reported in the *Railway Age* in March 2 as inquiring for five mail and express cars, 70 ft. long, has increased its inquiry to ten cars.

THE BALTIMORE & OHIO has ordered six 70-ft. steel baggage and mail cars with 30-ft. mail compartment, four 70 ft. steel baggage and mail cars with 15-ft. mail compartment from the American Car & Foundry Company; 100 express cars from the Standard Steel Car Company and 15 baggage cars from the Bethlehem Steel Company. Inquiry for this equipment was reported in the *Railway Age* of March 9.

Machinery and Tools

THE NORTHERN PACIFIC is inquiring for a 36-in. shear.

THE CHESAPEAKE & OHIO is inquiring for two 250-ton locomotive cranes.

THE DELAWARE, LACKAWANNA & WESTERN will send out inquiries in the near future for about 50 machine tools.

THE GULF COAST LINES have ordered from Manning, Maxwell & Moore, Inc., one 25-ton Shaw crane, 37 ft. 1⅝ in. span, for the Kingsville, Tex., shop.

THE CHICAGO & NORTH WESTERN is inquiring for a 24-in. and a 36-in. drill, a 12-in. punch and shear, a journal turning and axle lathe and a motor-driven grinder.

THE CHICAGO, BURLINGTON & QUINCY is inquiring for a tool and cutter grinder, a 16-in. lathe, a 30 in by 14 ft. engine lathe and three 18 in. by 8 ft. geared-head engine lathes.

Iron and Steel

THE CHESAPEAKE & OHIO has ordered 700 tons of structural steel for a highway bridge at Cincinnati from the Mt. Vernon Bridge Company.

THE SOUTHERN PACIFIC has ordered 300 tons of structural steel for miscellaneous bridge work from the Virginia Bridge & Iron Company.

Signaling

THE WABASH has ordered from the Union Switch & Signal Company material for the installation of automatic block signals on its line between Peru, Ind., and McGraw, 15 miles, single track. Color-light signals will be used.

CHICAGO, MILWAUKEE ST. PAUL & PACIFIC.—The Interstate Commerce Commission, Division 6, has issued a report approving with exceptions the installation of the automatic train-stop device, continuous induction type, of the Union Switch & Signal Company, on the La Crosse division.

DELAWARE & HUDSON.—The installation of the automatic train-stop device, intermittent induction type, of the General Railway Signal Company, on the Saratoga division, has been approved, with exceptions, in a report by Division 6 of the Interstate Commerce Commission.

Supply Trade

The Dearborn Chemical Company will remove its New York office on April 15 to 205 East Forty-second street.

The Dryice Corporation of America and subsidiaries have removed their executive offices from 50 East Forty-second street to 52 Vanderbilt avenue, New York.

George T. Paraschos has been appointed New England representative of the **Davis Brake Beam Company**, Johnstown, Pa. His headquarters will be at 1107 Boylston street, Boston, Mass.

Eugene M. Richey, formerly vice-president of the Standard Forgings Company, Chicago, has been elected vice-president of the **Marquette Railway Supply Company**, Chicago.

Carl P. Lohr has been appointed district sales agent of the **Roller-Smith Company** for the St. Louis territory with headquarters at St. Louis, Mo. **J. C. McDougall** has been appointed district sales agent for Washington, Oregon and Alaska, with headquarters at Seattle, Wash.

The name of the Deremer-Blatchford Company has been changed to the **Blatchford Corporation,** Chicago, following the retirement of **W. L. Deremer** from the former company and the acquisition of his interests by **Carter Blatchford** who becomes president of the new company.

The United Engineers & Constructors, Inc., Philadelphia, Pa., has organized the **United Engineers & Constructors (Canada) Ltd.,** with headquarters in the Drummond building Montreal, Que. The new company, of which **R. M. Henderson** is managing director, will execute engineering and construction work in Canada.

B. H. Witherspoon has been elected president of the **Pittsburgh Testing Laboratory**, Pittsburgh, Pa., and **A. R. Ellis** has been elected vice-president in charge of operations. Mr. Witherspoon was formerly district manager of the Remington Rand Business Service, Inc., in Los Angeles, Cal. He is a graduate of the University of Wisconsin; served in the First Division, Third Army Corps and Second A. E. F. in France, and was discharged as lieutenant colonel. Mr. Ellis has been affiliated with the Pittsburgh Testing Laboratory since 1910, and has been general manager and director since 1921. He is a graduate of the engineering department of Cornell University.

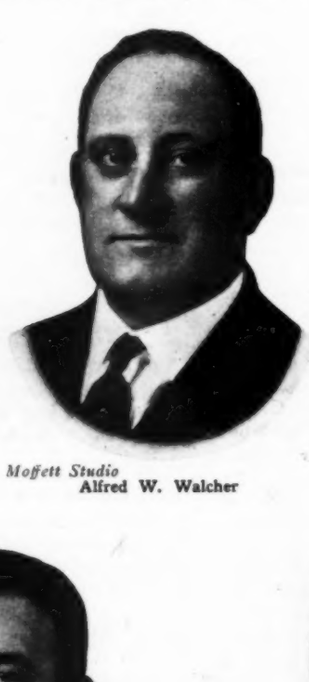
The S K F Industries, Inc., New York, has moved its district office at Buffalo from 517 Manufacturers and Traders building to Main and Genesee streets; the district office at Detroit has been moved from 6520 Cass avenue to 2820 East Grand Boulevard, and at San Francisco from 115 New Montgomery street to 221 Eleventh street.

American Steel Foundries

Robert H. Ripley, who has been elected senior vice-president of the American Steel Foundries, Chicago, was born at Boston, Mass., on June 6, 1876, and after attending Shattuck School, Fairbault, Minn., he graduated from Cornell University in 1899. In the latter year he was admitted to the Illinois bar

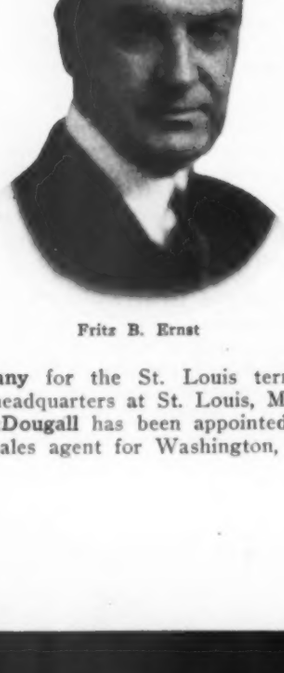
Blank-Stoller, Inc.
Robert H. Ripley

James C. Davis

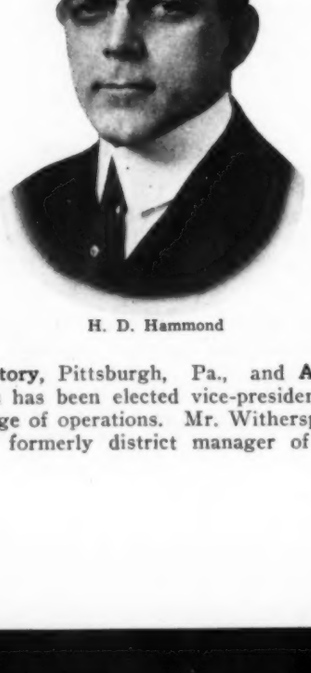


Moffett Studio
Alfred W. Walcher

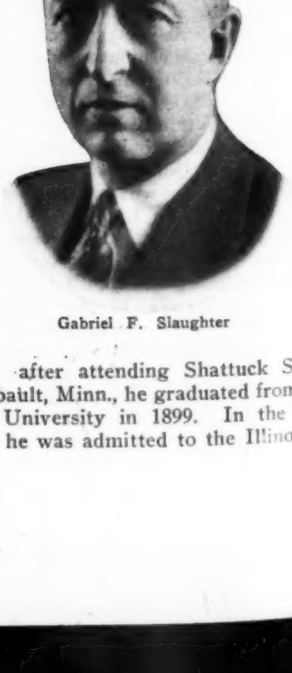
F. A. Lorenz, Jr.



Fritz B. Ernst



H. D. Hammond



Gabriel F. Slaughter

and engaged in the practice of law at Chicago for a year. During 1901 and 1902 Mr. Ripley served as a salesman for the Railway Steel Spring Company and he was then connected with the Simplex Railway Appliance Company for the following three years. In 1905 he was elected vice-president of the American Steel Foundries, serving in that capacity and as second vice-president until his election to senior vice-president on March 21.

James C. Davis, who has been elected advisory operating vice-president of the American Steel Foundries, was for 17 years associated with the Sargent Company. In 1896 he was appointed general superintendent of operations of the latter company where he remained until 1901 when he became general superintendent of the Leighton & Howard Steel Company, St. Louis, Mo. When those two companies were absorbed by the American Steel Foundries in 1902, Mr. Davis was appointed western district manager of the latter company and in June, 1905 he was promoted to assistant to the first vice-president in charge of operations at Chicago. In 1912 he was elected fourth vice-president in charge of foundry operations, a position he held until his election as advisory operating vice-president on March 21.

Alfred W. Walcher, who has been elected fourth vice-president, in charge of operations of the American Steel Foundries, became pattern foreman of the Leighton & Howard Steel Company at East St. Louis, Ill., on February 18, 1902, after eight years of foundry experience. Upon the absorption of this company by the American Steel Foundries he was transferred to the Granite City (Ill.) works of the latter company and in 1905 he was promoted to works manager. In 1916 Mr. Walcher was transferred to the forge plant at Indiana Harbor, Ind., where he was in charge of the production of shell forgings for the British government and later for the United States government until the end of the World War. On January 1, 1919, he was appointed assistant fourth vice-president, a position he held until his recent election as fourth vice-president, in charge of operations.

F. A. Lorenz, Jr., who has been appointed assistant vice-president in charge of operations of the American Steel Foundries, graduated from a course in railway mechanical engineering at the University of Illinois in 1909 and in the same year entered the service of the Chicago & North Western as a special motive power apprentice at the Chicago shops. During 1910 and 1911 he was employed in various capacities by the Republic Iron & Steel Company at the Inland plant, East Chicago, Ind., then becoming connected with the American Steel Foundries. With the latter company Mr. Lorenz has held the positions of manager of sales of "Davis" wheels, assistant to the fourth vice-president in charge of operations and works manager of the Indiana Harbor works. His appointment as assistant vice-president became effective on March 21.

Fritz B. Ernst, who has been elected vice-president, sales department, of the American Steel Foundries, was born in Madison, Ind., and graduated from a civil engineering course at Purdue University in 1900. From 1900 to 1902 he served on the editorial staff of the *Railway Age*, then returning to Purdue University as an instructor in car design, locomotive design and railway mechanical engineering. In 1906 Mr. Ernst became connected with the Fitzhugh-Luther Company, Hammond, Ind., where he remained until May, 1907, when he was appointed sales engineer of the American Steel Foundries at New York. He was promoted to assistant to the first vice-president at Chicago in 1912 and in 1924 he was further promoted to assistant first vice-president, his election as vice-president becoming effective on March 21.

H. D. Hammond, who has been elected vice-president of the American Steel Foundries in charge of miscellaneous sales, during his early training spent four years in the offices of Robert Wetherill & Co., Corliss engine manufacturers, at Chester, Pa., and one year with the Keystone Drop Forge Works at the same point, entering the service of the American Steel Foundries at the Thurlow (Pa.) works in September, 1906. In March, 1910, he was transferred to the Pittsburgh (Pa.) sales office and three years later he was appointed production engineer at the Indiana Harbor (Ind.) works. Mr. Hammond was promoted to manager of railroad miscellaneous sales at Chicago in March, 1915, and in December, 1917, he was further advanced to general manager of miscellaneous sales, a position he held until his election as vice-president in charge of miscellaneous sales on March 21.

Gabriel F. Slaughter, who has been elected vice-president, sales department, of the American Steel Foundries, started his early career in the stores department of the Chicago & North Western in 1897. In the same year he was promoted successively to supervising storekeeper and to general storekeeper, both with headquarters at Chicago, holding the latter position until 1902 when he was appointed St. Louis (Mo.) representative of the National Malleable Castings Company. In 1903 Mr. Slaughter was appointed sales agent of the Simplex Railway Appliance Company and in 1905 when this company was acquired by the American Steel Foundries he was appointed to a similar position with the parent company, a position he retained until his election as vice-president, sales department, on March 21.

Obituary

George H. Flinn, chairman of the board of Booth & Flinn, Ltd., New York, died of pneumonia in a hospital at Pittsburgh, Pa., on March 29, at the age of 54.

Construction

BALTIMORE & OHIO.—This company has awarded a contract to the Empire Construction Company, Baltimore, Md., for the construction of its section of the new Hanover street viaduct in Baltimore. The construction company will do the excavation and masonry work and will begin operations on the project immediately. About a year will be required to complete the viaduct.

CHESAPEAKE & OHIO.—Contracts have been awarded by this company as follows: To John W. Cowper Company, Inc., Richmond, Va., for a new enginehouse and shop facilities at Clifton Forge, Va.; to F. H. Clement & Company, Bethlehem, Pa., for grading and masonry work in connection with the extension of tracks and relocating main lines at Hinton, W. Va.; to Haley, Chisholm & Morris, Charlottesville, Va., for grading and masonry included in improvements at Russell, Ky., to cost about $1,433,000; to Boxley Brothers Company, Orange, Va., for converting the present railroad bridge over the Ohio river between Covington, Ky., and Cincinnati, O., into a highway bridge as a part of the Covington-Cincinnati improvement project, estimated to cost $12,000,000; to the Reed Laysley Company, Inc., for grading and masonry work for a connecting track between the Kanawa & West Virginia at Beech Glen, W. Va., and the Chesapeake & Ohio at Bryce, W. Va., including a bridge over the Gauley river, the total cost of the entire project being estimated at $221,348.

CLINTON-OKLAHOMA-WESTERN. — This company has applied to the Interstate Commerce Commission for authority to build a branch line of 8.7 miles in Gray county, Tex.

DELAWARE, LACKAWANNA & WESTERN.—This company plans the construction of a siding crossing Solar street in Syracuse, N. Y., to provide freight shipping facilities in the industrial district.

IDAHO PACIFIC.—This company has applied to the Interstate Commerce Commission for authority to build a new line of railroad from Nyssa, Ore., to Winnemucca, Nev., 238 miles. The application is signed by Robert Phillips, of New York, as attorney.

ISABEL & WESTERN.—The South Dakota Board of Railroad Commissioners has granted this company permission to construct a railway about 125 miles long from Isabel, S. D., on the Chicago, Milwaukee, St. Paul & Pacific to Camp Crook, in Harding county near the South Dakota-Montana line on the Missouri river.

LONG-BELL LUMBER COMPANY.—A contract has been let to the Pacific Construction Company for the construction of a logging railway from Ryderwood, Ore., to a point 20 miles northwest.

LOS ANGELES TERMINAL EXCHANGE, INC.—This company, incorporated in Del-

aware in 1927, has applied to the Interstate Commerce Commission for authority to construct an independent terminal system and union station at the Plaza and Civic Center, Los Angeles, Cal., together with about 20 tracks of about three miles each in a subway, to be operated with electric locomotives and to be connected with the tracks of all roads entering the city. It is stated that the company proposes to finance the project by issuing 200,000 shares of Class A 7 per cent stock, 250,000 shares of Class B 3½ per cent stock, and $50,000,000 of 30-year 5 per cent bonds. The application is signed by A. P. Gillies as president of the company.

PENNSYLVANIA.—This company has awarded a contract to the McClintic-Marshall Company, Pittsburgh, Pa., for the renewal of a bridge on its line over the Tuscarawas river near Gnadenhutten, O., the whole project to cost approximately $130,000. The work will require about 1,800 tons of steel. A contract also has been awarded to W. F. Trumble & Sons Company, Pittsburgh, for the construction of a yard office at Pittsburgh.

ST. LOUIS SOUTHWESTERN.—The Interstate Commerce Commission has authorized this company to construct a line extending from a connection with the Gideon & North Island at Gideon, Mo., southerly to a connection with the Deering & Southwestern at Deering, Mo., approximately 20 miles, and to construct a line from a connection with the Deering & Southwestern at Hornersville, Mo., southwesterly to Leachville, Ark., approximately 11 miles.

WESTERN PACIFIC.—As a part of its 1929 budget program this company plans to begin work within 60 to 90 days on the construction of extensions to the passing tracks at Pulga, Cal., and Belden which will have lengths of 1,859 ft. and 1,964 ft. respectively, at respective costs of $98,720 and $94,185. A passing track, 4,600 ft. long, will be constructed at Fitz, Cal., at a cost of $19,730. An extension of the station-hotel building at Portola, Cal., will require an expenditure of $24,130 and it is planned to expend $22,000 for the construction of a commissary building having dimensions of 40 ft. by 80 ft. at Oakland, Cal.

A PROPOSAL involving complete standardization of colored signal lights used on French railroads is being studied by the Minister of Public Works of that country. The proposal is based on a plan submitted by the French Railway Commission and involves the use of the three colors: Green, red and yellow-orange, indicating respectively "track clear ahead," "stop" and "warning, slow down." Up to the present time the types of signals in use have varied on the different French railways and the pending plan represents the initial step toward the adoption of the long desired uniformity. Should a standardization plan be adopted it is expected that five or six years would be required to complete it.

Railway Finance

ATCHISON, TOPEKA & SANTA FE.—*Terminal Property Acquired.*—The Western improvement Corporation, a non-operating subsidiary of the Santa Fe, has acquired the terminal properties of the Los Angeles Corporation, thereby providing the Santa Fe with an entrance into the ports of Los Angeles and San Pedro. The Los Angeles Corporation owned and operated terminal facilities at Los Angeles which consisted of the Los Angeles Junction railroad, the Los Angeles Union Stock Yards Company, the Central Manufacturing District, Inc., and the Westland Warehouses, Inc. The appraised value of the Central Manufacturing District, Inc., in 1927 was about $8,000,000. The Junction operates 18 miles of railroad.

BOSTON & MAINE.—*Bonds.*—The National City Company has offered $1,500,000 of 5 per cent mortgage bonds of this company, Series HH, at 98 and interest, to yield 5.75 per cent. The bonds will be dated March 1, 1929, and will mature March 1, 1932.

BANGOR & AROOSTOOK.—*Annual Report.*—Annual report for this company for 1928 shows net income after interest and other charges of $983,077, equivalent after allowing for dividend requirements on the 7 per cent preferred stock to $6.93 a share on the outstanding common stock. This compares with net income in 1927 of $1,139,723 or 8.41 a share. Selected items from the income statement follow:

BANGOR & AROOSTOOK	1928	1927	Increase or Decrease
Average mileage operated	614	614	.....
RAILWAY OPERATING REVENUES	7,199,222	7,401,075	—201,852
Maintenance of way	1,313,165	1,254,495	58,670
Maintenance of equipment	1,414,229	1,392,448	21,782
Transportation	1,797,966	1,882,297	—84,330
TOTAL OPERATING EXPENSES	4,950,505	4,956,597	—6,092
Operating ratio	68.77	66.97	1.80
NET REVENUE FROM OPERATIONS	2,248,717	2,444,478	—195,761
Railway tax accruals	573,623	596,539	—22,916
Railway operating income	1,673,858	1,847,651	—173,793
Hire of freight cars	213,804	227,711	—13,907
Joint facility rents, Dr.	2,206	1,471	735
NET RAILWAY OPERATING INCOME	1,899,190	2,086,304	—187,114
Non-operating income	285,304	300,744	—15,440
GROSS INCOME	1,959,162	2,148,395	—189,234
Interest on funded debt	947,851	995.600	—47,749
TOTAL DEDUCTIONS FROM GROSS INCOME	976,084	1,008,672	—32,588
NET INCOME	983,077	1,139,723	—156,646
Disposition of net income:			
Dividends on preferred stock	243,600	243,600	———
Dividends on common stock	372,960	302,042	70,918

BESSEMER & LAKE ERIE.—*Annual Report.*—The annual report of this company for 1928 shows net income after interest and other charges of $5,012,066, as compared with net income in 1927 of $3,183,597. Selected items from the income statement follow:

BESSEMER & LAKE ERIE	1928	1927	Increase or Decrease
Average mileage operated	.....	.....	.....
RAILWAY OPERATING REVENUES	15,794,736	13,410,859	2,383,877
Maintenance of way	1,313,414	1,390,823	—77,409
Maintenance of equipment	3,676,963	3,880,055	—203,092
Transportation	3,757,406	3,806,099	—48,693
TOTAL OPERATING EXPENSES	9,290,356	9,612,143	—321,784
NET REVENUE FROM OPERATIONS	6,504,378	3,798,716	2,705,662
Railway tax accruals	1,424,937	615,743	809,194
Railway operating income	5,079,332	3,181,987	1,897,345
Hire of freight cars—Cr.	60,115	282,073	—221,958
Joint facility rents—Cr.	38,423	31,469	6,954
NET RAILWAY OPERATING INCOME	not shown		
Non-operating income	712,338	822,684	—110,347
GROSS INCOME	5,791,670	4,004,671	1,786,999
Rent for leased roads	5,964	5,967	—3
Interest on funded debt	716,471	753,787	37,317
TOTAL DEDUCTIONS FROM GROSS INCOME	779,603	821,074	—41,470
NET INCOME	5,012,066	3,183,597	1,828,469
Surplus for year carried to profit and loss	4,592,090	2,763,621	1,828,469

CANADIAN NATIONAL.—*Acquisition of Grand Trunk Western.*—This company has applied to the Interstate Commerce Commission for an order, if necessary, authorizing it to acquire control of the Grand Trunk Western Railroad, by acquisition of its stock in exchange for stock of constituent companies consolidated with the Grand Trunk Western which the Canadian National now holds.

FEDERAL VALLEY.—*Notes.*—The Interstate Commerce Commission has authorized this company to issue $43,557 of promisory notes to retire maturing notes of the same amount.

GENESSEE & WYOMING.—*Note.*—The Interstate Commerce Commission has authorized this company to issue a promissory note for $400,000, pledging as collateral security an equal amount of its 5 per cent first mortgage bonds. The note will bear 5¼ per cent interest and will be used to pay bonds which will mature at an early date.

GULF, BEAUMONT & KANSAS CITY.—*Bond.*—The Interstate Commerce Com-

mission has authorized this company to issue one general mortgage bond for $1,700,000 to be delivered to the Atchison, Topeka & Santa Fe in satisfaction of $2,007,699 indebtedness.

GULF, MOBILE & NORTHERN.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire the properties of the Meridian & Memphis, the Jackson & Eastern and the Birmingham & Northwestern at a total purchase price of $4,549,758, which will be employed in each case to discharge the indebtedness of the selling company to the applicant. The application states that the G. M. & N. already controls the three companies by stock ownership and by lease and that their lines constitute integral parts of its railroad but that "it is desired to make the status of the matter in law what it is in fact."

HARBOR BELT LINE.—*Operation at Los Angeles Harbor.*—The Interstate Commerce Commission has authorized the Southern Pacific, the Pacific Electric, the Los Angeles & Salt Lake and the Atchison, Topeka & Santa Fe to pool certain of their facilities at Los Angeles Harbor, Cal., and to provide for unified operation by the jointly controlled "Harbor Belt Line Railroad."

KANSAS CITY SOUTHERN.—*Annual Report.*—The annual report of this company for 1928 shows net income after interest and other charges of $2,941,288, as compared with net income in 1927 of $1,897,667. Selected items from the income statement follow:

KANSAS CITY SOUTHERN	1928	1927	Increase or Decrease
Average mileage operated	865	865	.....
RAILWAY OPERATING REVENUES	21,423,897	22,048,606	—624,709
Maintenance of way	2,485,055	2,603,630	—118,575
Maintenance of equipment	3,321,178	3,496,471	—175,293
Transportation	6,369,109	6,785,783	—416,674
TOTAL OPERATING EXPENSES	14,089,021	14,764,491	—675,470
Operating ratio	71.64	73.30	—1.66
NET REVENUE FROM OPERATIONS	7,334,875	7,284,115	50,761
Railway tax accruals	1,259,496	1,396,770	—137,274
Railway operating income	6,070,971	5,879,872	191,098
Equipment rents—Dr.	1,007,215	1,019,110	—11,895
Joint facility rents—Dr.	90,188	92,743	—2,555
NET RAILWAY OPERATING INCOME	4,973,567	4,768,019	205,548
Non-operating income	1,898,702	610,568	1,288,134
GROSS INCOME	7,969,673	6,490,441	1,479,232
Rent for leased roads	171,759	171,814	—55
Interest on funded debt	2,590,231	2,599,987	—9,756
TOTAL DEDUCTIONS FROM GROSS INCOME	5,028,386	4,592,774	435,612
NET INCOME	2,941,288	1,897,667	1,043,621
Disposition of net income: Dividends on prefe'd stock	840,000	840,000	.....
Surplus for year carried to profit and loss	2,101,288	1,057,667	1,043,621

MISSOURI PACIFIC.—*Convertible Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue and sell $46,392,000 of 20-year 5½ per cent convertible bonds, and, from time to time, to issue a like amount of common stock for conversion. The bonds are to be convertible at the option of the holders at any time after May 1, 1931, into common stock at par. They are to be offered for subscription to the holders of common and preferred stock in an amount equal to 30 per cent of the stock held, at 97½, and Kuhn, Loeb & Co., have agreed, for a compensation of 2½ per cent of the principal amount of the bonds offered, to underwrite the issue. The proceeds are to be used to pay at maturity $30,551,000 of unifying and refunding mortgage bonds of the St. Louis, Iron Mountain & Southern and for other capital purposes.

NEW YORK CENTRAL.—*Equipment Trust.*—This company has applied to the Interstate Commerce Commission for authority to assume obligation and liability for an issue of $6,300,000 of equipment trust certificates, at 4½ per cent, as part of a total of $16,500,000 authorized for 1929, to be used in connection with the acquisition of 100 Mohawk freight locomotives. It is proposed to ask competitive bids for the certificates.

PITTSBURGH & WEST VIRGINIA.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $3,000,000 of first mortgage 4½ per cent bonds, Series B, to be dated April 1 and to mature in 30 years. The bonds are to be sold to Brown Bros. & Company at 93.5 and interest. On this basis the average annual cost to the applicant will be 4.917 per cent.

SOUTHERN.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to nominally issue $5,250,000 of its development and general mortgage 4 per cent bonds, Series A, payable April 1, 1956, to be held in the treasury until further order.

ST. LOUIS, SOUTHWESTERN.—*Acquisition of Gideon & North Island, etc.*—The Interstate Commerce Commission has authorized this company to acquire control of the Gideon & North Island, the Deering Southwestern and the Blytheville Leachville & Arkansas Southern by purchase of capital stock. To pay for this stock the commission has authorized the S. S. W. to issue $830,000 of common stock which will be delivered to the vendors. The S. S. W. is also authorized to construct certain extensions to provide connections with these properties.

UNION PASSENGER DEPOT OF GALVESTON.—*Bond.*—The Interstate Commerce Commission has authorized this company to issue one general mortgage six per cent bond, Series A, for $850,000 to be delivered to the Atchison, Topeka & Sante Fe in satisfaction of indebtedness.

WICHITA FALLS & SOUTHERN.—*Securities.*—The Interstate Commerce Commission has authorized this company to issue $1,500,000 of common stock and $3,000,000 of first mortgage and collateral lien 5 per cent bonds, $805,000 of the stock and $688,000 of the bonds to be issued in lieu of securities previously authorized, and $729,000 of bonds to be issued to refund a like amount of first mortgage bonds of a subsidiary. The remainder of the stock and bonds are to be sold t not less than par and 90 per cent of par respectively. The applicant stated that no arrangements have been made to sell the bonds but that if it is not able to sell them to the public at 90, its stock subscribers will purchase them at this price, which would make the average annual cost approximately 5.705 per cent. The bonds will mature in 1958.

YANKTON, NORFOLK & SOUTHERN.—*Securities.*—This company has applied to the Interstate Commerce Commission for authority to issue $2,000,000 of stock and $3,500,000 of 6 per cent 30-year first mortgage bonds, for the purpose of providing funds for the construction of its line from Yankton, S. D., to Pierce, Neb., 66.1 miles, and to acquire the stock of the Meridian Highway Bridge Company, of Yankton.

VICKSBURG, SHREVEPORT & PACIFIC.—*Bonds.*—In an application to the Interstate Commerce Commission this company asks authority to issue $1,845,000 of refunding and improvement mortgage bonds, to be delivered to the Yazoo & Mississippi Valley to reimburse that company for funds advanced for the redemption of a like amount of bonds called on May 1.

Valuation Reports

The Interstate Commerce Commission has made public final valuation reports finding the final value for rate-making purposes of the property owned and used for common-carrier purposes, as of the respective valuation dates, as follows:

Hamilton Belt	$185,000	1918
Texas City Terminal	3,940	1917
(used but not owned	$2,490,000)	

Dividends Declared

Baltimore & Ohio.—Common, 1½ per cent, quarterly; Preferred, 1 per cent, quarterly, both payable June 1 to holders of record April 13a.

Carolina, Clinchfield & Ohio.—Common, 1 per cent, quarterly, payable April 10 to holders of record March 30.

Delaware, Lackawanna & Western.—Common, $1.50, quarterly, payable April 20 to holders of record April 6.

Wabash.—Preferred A, 1¼ per cent, quarterly, payable May 25 to holders of record April 20.

Average Prices of Stocks and of Bonds

	Apr. 2	Last week	Last year
Average price of 20 representative railway stocks	128.29	127.30	123.10
Average price of 20 representative railway bonds	90.53	90.73	96.74

Annual Reports

Delaware, Lackawanna & Western Railroad Company

New York, April 1st, 1929.

TO THE STOCKHOLDERS OF

THE DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY:

A report of the operations of your Company, for the calendar year 1928, with accompanying statements showing comparisons with the preceding year, is herewith respectfully submitted.

The gross transportation receipts of the year 1928 were approximately four per cent less than those earned in the year 1927.

At the beginning of the year under consideration there seemed to be reasonable prospects of an early recovery from the decline in freight traffic that marked the close of the year 1927, and it was then anticipated that better traffic conditions would prevail throughout the spring and summer months of 1928, but this hope was not realized until the late fall and winter months of the year, when the freight revenues began to show improvement over those of the previous year.

Proportionately greater than the decrease in freight revenues was the reduction in revenues from passenger business, which was due to the inroads made upon this class of transportation by bus lines and private automobiles on improved highways paralleling the entire mileage operated by your Company. As a result of the diversion to bus lines and private automobiles during the year 1928, your Company carried 1,016,000 less passengers than in the year 1927, and in this loss, together with the diversion of vehicular traffic from the ferry lines to the Holland Vehicular Tunnel, is found the cause for practically one-half of the decrease in your Company's gross revenues.

Although your Management views with disappointment the reduction in gross receipts, it derives some satisfaction from the fact that a further reduction in cost of operation approximately proportionate to the falling off in gross revenues was accomplished, so that the percentage of operating expenses to revenues for the year was only fractionally in excess of that for the year 1927, and the net railway operating income but slightly less than that earned in the previous year, notwithstanding the substantial decrease in gross revenues.

Your Company enjoyed its fair share of the traffic moving in trunk line territory during the year 1928, and its relations with its patrons continue to be agreeable and satisfactory.

Operating results, as set forth in various detailed statements included in this report, are further explained and commented upon as follows:

Transportation Revenues

The aggregate revenues from all sources of transportation, in 1928, amounted to $81,135,181.

Downward adjustments in rates and the Company's proportion of divisions with other carriers resulted in slightly reducing the freight revenues earned per unit of service below like earnings of the year 1927. Taken individually these reductions do not appear to be serious, but their cumulative effect from year to year is to progressively reduce the Company's revenues.

Revenue earned from Transportation of Anthracite Coal, in 1928, was $19,857,920, a decrease of $661,863 when compared with the previous year.

The total tonnage of this commodity transported during the year was approximately the same as in 1927, and the reduction in gross receipts is accounted for by changes in distribution of the tonnage which resulted in a somewhat shorter average haul and less favorable divisions with connections for this class of traffic than was enjoyed in the previous year.

There can be no doubt, however, that the tonnage of anthracite coal would have been substantially greater during 1928 were it not for the extremely moderate weather that prevailed throughout the winter months in most of the territory where anthracite fuel is distributed for consumption.

Revenues from Transportation of Passengers during the year 1928 amounted to $12,003,361, a decrease of $1,003,572 under similar revenues of 1927.

The benefits of improved highways paralleling your Railroad, and toward the construction and maintenance of which the Company has contributed materially through taxation, are utilized by competing bus lines that pay comparatively little toward their construction and upkeep, and have practically no expense for maintenance of either right-of-way or station and other facilities, such as signals and interlockers, costly train control and other safety devices which the railroads are obliged to furnish and maintain for safe and expeditious transportation.

Revenues from transportation of United States Mail, in 1928, amounted to $1,084,019, an increase over the previous year of $102,338. Of this increase approximately $62,000 is attributable to increased rates of pay for mail transportation that became effective August 1st, 1928. The Railway Mail Pay Rate Case, mentioned in the last annual report, and upon which a decision by the Interstate Commerce Commission was then pending, was decided by an Order of the Commission dated July 10th, 1928, increasing mail transportation rates an average of 15% with certain changes in units of measurement for baggage car service that resulted, for your Company, in a net increase of approximately 14%. The Order also granted a flat increase of 15% in rates of mail pay from the date the petition was filed, May 9th, 1925, to August 1st, 1928, the effective date of the Order. The pay accruing to your Company for the back period herein mentioned amounts to $465,000, but the Post Office Department has declined to make settlement for the retroactive period awaiting decision of the Court of Claims in a similar case that was pending. This Court has now decided the case in favor of the Carriers, but the Post Office Department has carried the case to the U. S. Supreme Court where it is scheduled to be heard in March.

Revenues in 1928 from Express privileges, under contract with the American Railway Express Company, amounted to $1,722,520, or $61,459 less than those of the preceding year. The gradual decrease from year to year in railway express business is due to the diversion of short-haul traffic to auto trucking companies, and the increasing use of the parcel post.

Revenues from the Transportation of Milk and Cream during the year 1928 amounted to $2,325,219, or practically the same amount as that earned in the year 1927. The outlook for this class of traffic continues to be promising.

The decrease in Other Transportation Revenues is fully accounted for by a substantial reduction in earnings from vehicular traffic formerly patronizing the ferries of your Company, but diverted to the Holland Tubes when that thoroughfare opened November 14th, 1927.

The decrease in Incidental Revenues of $78,417 is in part due to discontinuing the operation of the Company's restaurants at Scranton, Binghamton and Buffalo, and leasing same to the Union News Company. The reduction in revenues effected by this change was approximately $48,000, but a reduction of a greater amount was brought about in operating expenses, as the cost to the Company for operating these restaurants exceeded the revenues derived therefrom. The balance is made up of minor decreases in revenues from dining cars, station privilges and demurrage.

Operating Expenses

A statement, by primary accounts, of the total cost of maintaining and operating your Railroad, during the year 1928, showing increases and decreases, in comparison with similar expenses of the previous year, is included on pages 19 to 22 of this report.

The total operating expenses, for the year 1928, amounted to $57,975,287, a decrease of $2,207,774, compared with the operating costs of 1927.

A statement of the causes for the more important increases and decreases, in comparison with the previous year, is as follows:

Maintenance of Way and Structures

There was expended for repairs and renewals of roadway and structures, in 1928, $7,954,233, or $155,857 less than like costs of the year 1927.

The established standards of maintenance for fixed property were continued throughout the year 1928, resulting in practically the same expenditures therefor as in previous years.

A serious washout of an embankment in the vicinity of Dansville, N. Y., caused considerable additional cost in roadway maintenance.

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There was laid in replacement during the year, 220,012 treated and 7,515 untreated cross ties.

New rail laid in replacement during 1928 aggregated 20,523 tons, or 3,158 tons in excess of the tonnage laid in 1927. A comparative statement showing tonnages by weight sections laid in replacement, by years from 1920 to 1928, inclusive, is as follows:

Year	Tonnage 130 Lbs. to Yard	Tonnage 118 Lbs. to Yard	Tonnage 105 Lbs. to Yard	Tonnage 80 Lbs. to Yard	Total Tonnage All Weights
1920	....	....	16,297	2,944	19,241
1921	....	....	19,572	1,283	20,855
1922	....	....	11,604	1,245	12,849
1923	....	....	14,199	2,308	16,507
1924		9,515	6,232	620	16,367
1925	7,378	4,501	880	36	12,795
1926	13,541	26	3,634	723	17,924
1927	13,623	44	3,298	400	17,365
1928	15,398	7	5,113	5	20,523

The increase in cost of Telegraph and Telephone Lines and Signals and Interlockers was mainly due to relocation and adjustments made necessary by change in approaches to the new Hackensack River Bridge, and the installation of third and fourth tracks Boonton to East Dover, N. J.

Repairs and renewals were made as the need for same became apparent, and the various units of fixed property were in a good state of preservation and usefulness at the end of the year.

Maintenance of Equipment

The total expenditures for maintaining rolling stock and floating equipment, in 1928, were $13,795,757, a decrease of $840,755 under similar expenditures of the preceding year.

Following the substantial reduction effected in 1927, and previous years, in repair costs of locomotives and freight train cars, a further reduction in this class of expenditure was accomplished in 1928, resulting in a decrease of $269,213 in steam locomotive repairs, and $156,405 in freight train car repairs.

The savings effected in the foregoing repair costs, and in other operating costs incident to maintaining equipment, demonstrates the wisdom of the policy adopted and pursued by your Company, of retiring old and light capacity locomotives and freight cars, when the cost of maintaining same becomes excessive.

During the year 1928, there were retired from service, 24 locomotives and 1,073 freight train cars.

The amount of depreciation charged to the appropriate primary accounts in Maintenance of Equipment, to provide a reserve for ultimate retirements, aggregated $2,731,276, or $50,649 more than the provisions of the preceding year.

All classes of rolling stock were adequately maintained, and in good serviceable condition at the close of the year.

The substantial reduction in the cost of floating equipment repairs, amounting to $258,090, was due to the comparatively few units of ferry and freight floating equipment that required complete overhauling or heavy repairs during the year.

All repairs and renewals of parts necessary to keep the equipment in good working condition were promptly made, but there is necessarily more or less fluctuation from year to year in the cost of maintaining floating equipment, due to the fewer units employed, as compared with rolling stock, and the longer periods elapsing between heavy repair requirements.

Practically all floating equipment repairs were made by the Company's forces in the Brighton Marine Repair Yard, operated jointly for the benefit of your Company and the Lehigh Valley Railroad Company.

Transportation Expenses

The cost of performing Transportation Service, in the year 1928, was $31,792,793, a decrease of $1,272,234 under similar cost of the previous year.

There was transported, in 1928, 27,575,131 tons, or 1.9 per cent less than the tonnage handled in 1927. The revenue freight train miles required to handle this tonnage were 6,454,623, or 3.6 per cent less than in 1927, and the division between east and westbound tonnage handled was approximately the same as in the preceding year.

The decrease in compensation of station employees is due to handling less L. C. L. tonnage than in the year 1927, and the reduction of station forces to a minimum consistent with good service.

The decrease of $262,823 in Enginehouse Expenses—Yard and Train, is the further result of the adjustment and rearrangement of enginehouse facilities, and the reorganization of forces employed therein, which was made in the latter part of the year 1927.

The cost of Fuel used for Yard and Train Locomotives, in 1928, was $47,703 more than similar cost in 1927.

There was a decrease in fuel used, in 1928, of 45,105 tons, or approximately 2½ per cent less than in 1927, but the fuel prices per ton were higher in 1928, which fully accounts for the increased operating cost.

The decrease in compensation of Enginemen and Trainmen is due to the reduced train and locomotive mileage required to handle the traffic, and also to a reduction in payments for punitive overtime resulting from the use of the motive power units of increased capacity installed in 1926 and 1927.

Loss and Damage-Freight payments decreased $40,278, or 9.3 per cent less than in the previous year. This is a very satisfactory showing and evidences the continued cooperation of shippers with the employes of your Company in endeavoring to reduce loss and damage to shipments at stations and in transit to the minimum by proper packing and loading, as well as careful handling enroute. The steady progress that has been made from year to year in the reduction of loss and damage payments is illustrated by the following percentages of such payments to gross freight revenues:

Year 1928	Year 1927	Year 1926	Year 1925
.66%	.70%	.72%	.74%

The cost to your Company for Injuries to Persons, caused by transportation accidents during the year 1928, was $362,335, being $267,682, or 42½ per cent less than the corresponding payments of the previous year. This substantial reduction in casualties is especially gratifying to your Management, and it will be viewed with satisfaction by all who are interested in reducing to the minimum the distressing accidents that occur all too frequently at grade crossings, or from other causes incident to transportation operations. In this connection it seems appropriate to inform you that your Company has been unanimously awarded a Certificate of Honorable Mention by, and received the congratulations of, the E. H. Harriman Memorial Awards Committee of the American Museum of Safety, New York, for "Conspicuous recognized safety and accident prevention work" for the year 1927.

Valuation Expenses

Since the effective date of the Valuation Section of the Act to Regulate Commerce, March 1st, 1913, your Company has been obliged to maintain an organization of Valuation Engineers, Land Attorneys and Accountants, the direct cost of which has aggregated $1,191,936. The expenses, by calendar years, of complying with the requirements of the Interstate Commerce Commission in its efforts to carry out the provisions of the Act are as follows:

1913	$ 434.55	1921	$151,340.62
1914	34,393.16	1922	90,228.35
1915	45,037.64	1923	77,456.11
1916	33,465.87	1924	75,418.45
1917	35,762.80	1925	74,222.36
1918	50,673.88	1926	81,612.01
1919	104,030.38	1927	87,273.53
1920	154,739.68	1928	95,846.71
		Total	$1,191,936.10

Agriculture and Industry

The economic condition of the farming communities served by your Company is generally satisfactory, and has shown improvement during the past year.

The muck crop farmers had a very successful season, and were able to dispose of their produce at profitable prices. Practically all farmers engaged in producing muck crops enjoyed a prosperous year, and an increase in acreage for this class of farming is under preparation in anticipation of a larger crop in 1929.

The production of cabbage, although materially reduced in 1928, due to unfavorable weather conditions, was sold at exceptionally good prices.

Dairy farmers in New York State enjoyed a prosperous year with increased profits. In certain periods of the year the increased demand of the large cities for fluid milk has not been met by the producers, and the Agriculturist employed by your Company is a member of a Committee appointed to study this situation with a view to making remedial recommendations. The studies thus far made reveal that while the total annual production of milk is sufficient to meet the demands, there is a falling off in the months of October and November to a point of insufficiency. With the information now obtained, the Committee is engaged in formulating a program of educational work with a view to influencing the farmers to so shift their production that the supply of milk may be more uniform throughout the year.

Further progress was made in the production of miscellaneous crops, and, taken as a whole, the farming industry in territory through which your Company operates is in a satisfactory condition.

During the year 1928, the Industrial Department of your

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Company influenced the location of sixty-four new industries at various points served by the railroad, and it is anticipated that these industries will contribute 6,720 cars per annum of general traffic.

Financial

Pursuant to appropriate action taken by the Managers of each Company, and authorization by the Interstate Commerce Commission in Finance Docket No. 6616, decided March 13th, 1928, your Company acquired the property of The Lackawanna and Montrose Railroad Company, a line of single track railroad extending from its junction with your Railroad at Alford, Pa., to Montrose, Pa., a distance of 9.93 miles. Under the terms of this merger, your Company was authorized to issue $130,500 of its capital stock, consisting of 2,610 shares of a par value of $50 each, in exchange for an equal number of shares of a like par value of the capital stock of The Lackawanna and Montrose Railroad Company. All of the capital stock of The Lackawanna and Montrose Railroad Company, excepting two shares, was owned and held in the treasury of your Company at the date of the merger.

Welfare Expenditures

Under the pension system adopted by your Company, effective June 1st, 1902, there was paid to retired employes, during the year 1928, $401,543, an increase of $31,902, or 8.63 per cent, over the pension payments in 1927.

The progressive increases in the Company's pension disbursements is indicated by the appended statements of payments, by calendar years, from 1902 to 1928, inclusive.

Calendar Year	Amount	Calendar Year	Amount	Calendar Year	Amount
1902	$ 6,360.94	1911	$ 85,092.24	1920	$187,299.98
1903	16,202.85	1912	93,521.50	1921	213,625.49
1904	24,619.09	1913	103,607.95	1922	223,587.23
1905	31,681.05	1914	111,089.68	1923	245,071.48
1906	45,196.13	1915	122,828.46	1924	260,213.20
1907	51,412.95	1916	134,969.98	1925	302,040.85
1908	57,620.24	1917	154,009.42	1926	347,161.36
1909	71,322.42	1918	153,577.12	1927	369,641.42
1910	80,580.15	1919	160,958.05	1928	401,543.04
				Total	$4,054,834.27

Statistical information in respect of pensioned employes on the rolls, December 31st, 1928, is as follows:

Effective since June 1st, 1902

Total Number on List, December 31st, 1928	611
Greatest Length of Service	62 yrs. 9 months
Number of Pensioners who served 50 years and over	81
Number of Pensioners who served between 40 and 50 years	243
Number of Pensioners who served between 25 and 40 years	275
Number of Pensioners who served less than 25 years	12
Average number of years in employ of Company	40 yrs. 3 months
Average age at retirement	67 yrs. 3 months
Average age at present time	72 yrs. 9 months
Died during the year	76
Number of names added to list during year	94
Average pension payroll per month	$33,461.92
Total number pensioned to December 31st, 1928	1,658
Total Pensions Paid, June 1, 1902 to December 31, 1928	$4,054,834.27

Group Insurance

Pursuant to the plan authorized and made effective February 1st, 1922, your Company paid as its proportion of the premiums assessed for the year 1928, $228,651.92.

A statement of the transactions under the plan, during the year 1928, and the number of beneficiaries at the close thereof, together with other important details, follow:

Effective February 1st, 1922

Number Insured December 31st, 1928	17,654
Total Insurance, December 31st, 1928	$35,239,000
Deaths during the Year 1928	222
Permanent Disability Claims, Year 1928	24
Insurance Company paid account Death Claims during 1928	$445,000
Insurance Company paid account Disability Claims during 1928	$46,000
Number of Employes insured for $10,000 as of December 31st, 1928	231
Number of Employes insured for $5,000 as of December 31st, 1928	70
Number of Employes insured for $2,000 as of December 31st, 1928	15,226
Number of Employes insured for $1,000 as of December 31st, 1928	2,127

Premiums paid for the Year 1928, were as follows:

Employes paid 46.29 per cent of Premiums	$197,094.00
Company paid balance of 53.71 per cent	$228,651.92
Employes insured for $10,000 and $5,000 (entire premiums paid by employes)	$34,127.20
Average monthly payment by the Company	$19,054.33
Number of Death Claims, Feb. 1st, 1922 to Dec. 31st, 1928	1,067
Number paid Permanent Disability Benefits	74
Amount paid account of Death Claims, Feb. 1st, 1922 to Dec. 31st, 1928	$2,067,000.00
Amount paid account of Permanent Disability Claims	$140,000.00

In addition to the foregoing expenditures, your Company paid as its proportion of the 1928 deficit from the operation of the Moses Taylor Hospital, of Scranton, Penna., $47,127.05; contributed toward the running expenses of Railroad Y. M. C. A.'s, located at various points along the line, $30,449.27, and in addition, there has been erected a new and modern three story brick Railroad Y. M. C. A. at Elmira, N. Y., for the accommodation of the employes, at a cost of $73,610.

Taxes

Tax assessments during the past fourteen years are indicated by the following:

Calendar Years	Total Tax Assessments	Taxes per Dollar of Gross Revenue Cents	Taxes per Dollar of Revenue after Operating Expenses Cents
1915	$2,115,333.84	4.72	12.42
1916	2,517,882.68	4.88	12.82
1917	3,584,917.49	6.27	18.35
1918	3,922,872.54	5.71	20.85
1919	5,159,802.72	7.18	32.74
1920	4,539,785.14	5.45	47.79
1921	4,979,439.57	5.80	28.01
1922	4,894,466.10	6.56	44.72
1923	5,995,697.51	6.80	32.02
1924	6,900,101.85	7.96	31.02
1925	6,832,652.72	8.17	32.16
1926	7,671,403.68	8.64	29.03
1927	7,457,093.11	8.81	30.43
1928	6,392,638.37	7.88	27.60

The substantial reduction in the requirements for taxes, in 1928, is due to a reduction in the rate for Federal Income Taxes from 13½ per cent to 12 per cent, and a reduction in income subject to Federal Taxation.

Additions and Betterments

Charges to the Investment Account, for Road and Equipment of your Company and its leased lines, less credits for property retired from service during the year 1928, were $4,431,451.17, a classified statement of which appears on page 23.

Some of the projects that were either completed, or upon which substantial expenditures were made during the year, are as follows:

1. Erection of new four-span bridge on concrete piers at Millington, N. J.
2. Completing the strengthening of side walls and applying concrete and brick lining in Oxford Tunnel, at Oxford Furnace, N. J.
3. Completing elimination of grade crossings at Barclay and Mill Streets, construction of new passenger station, with express and milk station facilities, also relocation of main tracks and grading, in preparation for third and fourth tracks, at Paterson, N. J.
4. Completing addition of third and fourth main tracks, between Boonton and East Dover, N. J.
5. Completing construction of new vertical lift steel bridge over the Hackensack River.
6. Construction of new brick passenger station, new driveway adjacent to new street, platform, ramps and concrete curbs, Lyndhurst, N. J.
7. Renewing two deck plate girder spans and reinforcing steel members on bridge at Changewater, N. J.
8. Addition of new sub-structure, consisting of piles, caps and grillage, also addition of stone paving with concrete base at Fourteenth Street Ferry Terminal, Hoboken, N. J.—90 per cent completed.
9. Acquisition of land in Jersey City, N. J., for new warehouse and terminal facilities.
10. Additions and betterments to Signal and Interlocking plants at Hoboken, N. J.
11. Completing the installation of automatic train control between Elmira, N. Y., and Scranton, Pa., a distance of 132 miles of road, double track.
12. Addition of 200-ton track scale, Tobyhanna, Pa.
13. Addition of 50,000 gallon water tank, 10" water crane and 3,500 lineal feet of cast iron water line, Clarks Summit, Pa.
14. Elimination of grade crossing of State Highway Route No. 517, Portland, Pa.
15. Realignment of main track to provide right of way for construction of improved highway, between West Nanticoke and Hunlocks Creek, Pa., 20 per cent completed.
16. Addition of three story brick Railroad Y. M. C. A. Building, Elmira, N. Y.
17. Realignment of main line tracks including the necessary excavation, extension to culverts, etc., Dansville, N. Y., to provide against land slides.
18. Extension of concrete arch carrying highway over tracks to provide a width of 60 lineal feet with more gradual slopes at Mill Creek, Dansville, N. Y.
19. Construction of two tracks in the Abbott Road Yard, Buffalo, N. Y., to supply additional yard capacity.
20. Extending the Elk Street team yard to Michigan Street, Buffalo, N. Y., including concrete paving with drainage, to provide increased team track facilities.

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21. Installing 85-foot turntable and extending two stalls in enginehouse, Utica, N. Y., strengthening bridges on the Utica Division to accommodate the larger locomotives now in service.
22. Industrial tracks were laid, during the year 1928, at the following locations: Bernardsville, Kingsland, Blairstown, Morris Plains, Millburn, Summit and Passaic, in the State of New Jersey; Wilawanna, Plymouth, Danville, Nazareth and Scranton, in the State of Pennsylvania; and Ithaca, Binghamton, Syracuse, Johnson City, East Buffalo and Buffalo, in the State of New York.

Grade Crossings

Expenditures for the elimination of highway crossings at grade, during the year 1928, amounted to $205,190.

Grade eliminations, on which partial expenditures had been made in 1927, were completed in 1928, as follows:

1 at Barclay Street,	Paterson, N. J.
1 at Mill Street,	Paterson, N. J.
1 at Pinetree Road,	Mountain Lakes, N. J.
1 at Wrights Crossing,	Denville, N. J.
1 at Dickerson Road,	East Dover, N. J.
1 at County Road,	Franklin, N. J.

In addition to the above, grade crossings were eliminated at the State Highway, Portland, Pa., by the construction of an undercrossing, and at Hill Street, Atlanta, N. Y., Nellis Crossing, East Bethany, N. Y., and Chepachet Highway, Cedarville, N. Y., by the construction of marginal highways.

The four grade crossings at Cheektowaga, N. Y., on which elimination work is in progress, were uncompleted at the end of the year 1928, and it is estimated that it will cost $66,000 to complete same.

The Management hereby acknowledges its indebtedness to the stockholders who have rendered able assistance in procuring competitive traffic during the year, and earnestly solicits a continuation of their good offices in this direction throughout the year 1929.

The loyal and efficient service rendered by officers and employes of the Company is hereby duly acknowledged.

By order of the Board of Managers.

J. M. DAVIS,
President.

GENERAL BALANCE SHEET, DECEMBER 31st, 1928 AND 1927

ASSETS

	1928		1927	
Investments:				
Investment in Road and Equipment:				
Road	$50,850,744.67		$50,224,061.13	
Equipment	60,469,356.14		61,108,811.72	
Improvements on Leased Railway Property	16,579,882.90		16,766,019.30	
Miscellaneous Physical Property	2,246,085.36		2,239,178.24	
Investment in Affiliated Companies:				
Stocks	9,481,484.37		9,562,610.25	
Bonds	2,996,655.00		2,551,919.25	
Notes	3,772,964.42		3,824,709.95	
Advances	2,575,081.80		2,987,638.54	
Other Investments:				
Stocks	1,252,607.75		1,249,644.25	
Bonds	27,345,292.57		27,324,452.57	
Notes	616,635.94		633,635.94	
Advances	21,910,864.22		17,284,943.21	
		$200,097,655.14		$195,757,624.35
Current Assets:				
Cash	$5,422,021.70		$7,697,048.52	
Loans and Bills Receivable	274.23		988.91	
Traffic and Car Service Balances Receivable	1,391,040.97		1,206,076.44	
Net Balances Receivable from Agents and Conductors	1,005,545.96		808,767.84	
Miscellaneous Accounts Receivable	1,671,003.44		1,846,419.29	
Materials and Supplies	2,830,532.88		3,131,789.63	
		$12,320,419.18		$14,691,090.63
Deferred Assets:				
Working Fund Advances	$27,613.58		$28,472.06	
Insurance and Other Funds	151,659.00		172,499.00	
		$179,272.58		$200,971.06
Unadjusted Debits:				
Rents and Insurance Premiums Paid in Advance	$627,518.64		$646,198.32	
Other Unadjusted Debits	839,575.96		467,870.47	
		$1,467,094.60		$1,114,068.79
		$214,064,441.50		$211,763,754.83

LIABILITIES

	1928		1927	
Capital Stock:				
Common Stock	$87,407,500.00		$87,277,000.00	
Less held by Company	2,966,400.00		2,835,900.00	
	$84,441,100.00		$84,441,100.00	
Stock Liability for Conversion	100.00		0	
Premium on Capital Stock	70,720.00		70,720.00	
		$84,511,920.00		$84,511,820.00
Long Term Debt:				
Funded Debt Unmatured	$320,000.00		$320,000.00	
Less held by Company	222,400.00		222,400.00	
	$97,600.00		$97,600.00	
Non-Negotiable Debt to Affiliated Companies	221,374.67		33,145.97	
		$318,974.67		$130,745.97
Current Liabilities:				
Traffic and Car Service Balances Payable	$1,947,754.96		$1,744,633.86	
Audited Accounts and Wages Payable	3,831,455.69		3,387,454.62	
Miscellaneous Accounts Payable	11,830.26		9,962.88	
Interest Matured Unpaid	3,018.00		3,303.00	
Dividends Matured Unpaid	23,462.00		24,972.50	
Unmatured Dividends Declared	4,222,055.00		4,222,055.00	
Unmatured Rents Accrued	1,429,307.02		1,418,551.06	
Other Current Liabilities	141,234.39		150,936.70	
		$11,610,117.32		$10,961,869.62
Deferred Liabilities:				
Other Deferred Liabilities		$8,704.40		$7,781.39
Unadjusted Credits:				
Tax Liability	$3,137,151.65		$3,910,938.78	
Insurance and Casualty Reserves	655,686.15		732,559.43	
Operating Reserves	27,533.34		32,558.69	
Accrued Depreciation—Equipment	33,294,277.82		31,389,875.48	
Other Unadjusted Credits	1,556,255.99		1,342,991.69	
		$38,670,904.95		$37,408,924.07
Corporate Surplus:				
Additions to Property through Income and Surplus	$6,733,501.70		$6,724,240.13	
Profit and Loss—Credit Balance	72,210,318.46		72,018,373.65	
		$78,943,820.16		$78,742,613.78
		$214,064,441.50		$211,763,754.83

[Advertisement]

Norfolk and Western Railway Company, Thirty-third Annual Report

ROANOKE, VA., March 26th, 1929.

To the Stockholders of the Norfolk and Western Railway Company:

Your Board of Directors submits the following report for the year which ended December 31st, 1928.

Mileage of Road and Track in Operation

	December 31st, 1928 Miles	December 31st, 1927 Miles	Increase or Decrease Miles
Main Line	1,542.67	1,542.67	
Branches			
Operated as second track	127.28	127.28	
Other branches	532.41	533.75	
	659.69	661.03	Dec. 1.34
Total miles	2,202.36	2,203.70	Dec. 1.34
Lines operated under lease	22.27	22.27	
Lines operated under trackage rights	15.60	15.60	
Total miles of road in operation	2,240.23	2,241.57	Dec. 1.34
Second track	620.75	620.75	
Third track	13.58	13.58	
Sidings and yard tracks	1,626.88	1,601.32	Inc. 25.56
Total miles of all tracks in operation	4,501.44	4,477.22	Inc. 24.22
Average miles of road operated	2,241.46	2,241.75	Dec. .29
Average miles of track operated	4,481.46	4,448.82	Inc. 32.64

The decrease in miles of road in operation, 1.34 miles, is due to the abandonment of portion of Dingess Branch.

The Year in Brief

Following is a comparison of important 1928 figures with those for 1927:

	1928	1927	Increase or Decrease
Revenue from Freight	$97,501,583.52	$99,992,235.10	Dec. $2,490,651.58
Revenue from Passengers	5,726,833.34	6,893,707.60	Dec. 1,166,874.26
Revenue from Mail, Express and Miscellaneous	3,718,694.52	4,062,257.94	Dec. 343,563.42
Total Revenue from Operations	$106,947,111.38	$110,948,200.64	Dec. $4,001,089.26
Maintenance of Roadway and Structures	$15,475,724.65	$15,711,540.40	Dec. $235,815.75
Maintenance of Equipment	19,933,551.65	21,261,404.42	Dec. 1,327,852.77
Transportation—Expense of Operation	26,608,500.41	28,988,768.59	Dec. 2,380,268.18
Other Expenses	4,503,919.00	3,734,412.22	Inc. 769,506.78
Total Operating Expenses	$66,521,695.71	$69,696,125.63	Dec. $3,174,429.92
Net Revenue from Operations	$40,425,415.67	$41,252,075.01	Dec. $826,659.34
Ratio of Operating Expenses to Total Operating Revenue	62.20%	62.82%	Dec. .62%
Federal, State and Local Taxes	$9,200,000.00	$10,300,000.00	Dec. $1,100,000.00
Uncollectible Revenue Charges	7,271.30	13,740.03	Dec. 6,468.73
Net Rental of Equipment and Joint Facilities—Credit	2,985,913.57	3,072,615.55	Dec. 86,701.98
Net Railway Operating Income	$34,204,057.94	$34,010,950.53	Inc. $193,107.41
Other Income—(Mainly Interest on Investments)—Net	1,489,903.62	1,767,965.98	Dec. 278,062.36
Gross Income from all sources	$35,693,961.56	$35,778,916.51	Dec. $84,954.95
Interest Paid on Bonds and Equipment Obligations	$4,966,918.13	$5,127,621.02	Dec. $160,702.89
Dividends on Adjustment Preferred Stock—$4. per share	919,692.00	919,692.00	
Balance of Income	$29,807,351.43	$29,731,603.49	Inc. $75,747.94
Earned per share on average amount Common Stock outstanding	21.27	21.26	Inc. .01

	1928	1927	Increase or Decrease
Dividends on Common Stock—$10. per share	$14,020,370.00	$13,990,767.50	Inc. $29,602.50
Funded Debt outstanding at end of year	112,980,800.00	116,456,800.00	Dec. 3,476,000.00
Capital Stock outstanding at end of year	163,280,600.00	162,998,600.00	Inc. 282,000.00
Investment in Road and Equipment at end of year	426,175,929.83	421,517,536.78	Inc. 4,658,393.05

At the end of the year Funded Debt represented 40.9% of outstanding capital obligations, and Capital Stock 59.1%.

Capital Stock

The aggregate amounts of Adjustment Preferred and Common capital stock authorized by the stockholders and issued, including 77 shares ($7,700) of Adjustment Preferred stock and 24 shares ($2,400) of Common stock held in the Company's treasury, were as follows:

	Authorized by Stockholders	Issued	
		Par Value	Shares
Adjustment Preferred Stock	$23,000,000	$23,000,000	230,000
Common Stock	250,000,000	140,290,700	1,402,907
Totals, December 31st, 1928	$273,000,000	$163,290,700	1,632,907
Totals, December 31st, 1927	273,000,000	163,008,700	1,630,087
Increase (all Common Stock)		$282,000	2,820

The additional 2,820 shares of Common Stock were issued in exchange for $282,000 Convertible 10 Year 6 per cent. Gold Bonds of 1919 surrendered for conversion.

Of the $109,709,300 Common Stock authorized by the stockholders but unissued, $435,300 was reserved for the conversion at par of a like amount of outstanding Convertible 10 Year 6 per cent. Gold Bonds of 1919.

Funded Debt

The aggregate Funded Debt actually outstanding was as follows:

	Dec. 31st, 1928	Dec. 31st, 1927	Decrease
Mortgage Bonds	$95,265,500	$95,288,500	$23,000
Convertible Bonds ($410,000 not now convertible)	845,300	1,158,300	313,000
Equipment Trust Obligations	16,870,000	20,010,000	3,140,000
Totals	$112,980,800	$116,456,800	$3,476,000

The right of the holders of Convertible 10 Year 6 per cent. Bonds of 1919 to convert their bonds into Common Stock will terminate at the maturity of the bonds, September 1st, 1929.

Road and Equipment

The charges to Investment in Road and Equipment during the year were $4,658,393.05.

The investment in road, equipment, and miscellaneous physical property on December 31st, 1928, was $430,156,455.40, of which $44,395,593.93 was provided by appropriations from income and surplus, as shown by the General Balance Sheet.

New equipment received during the year was as follows:

8 mail storage cars, all steel.
250 box cars, 100,000 lbs. capacity, all steel (built at Roanoke Shops).
1,000 gondola cars, 180,000 lbs. capacity, all steel (built at Roanoke Shops).
1,000 hopper cars, 115,000 lbs. capacity, all steel.
2 maintenance of way locomotive tenders (built at Roanoke Shops).
2 maintenance of way camp cars (built at Roanoke Shops).
6 maintenance of way flat cars (built at Roanoke Shops).
2 automobile trucks.

Additions and Betterments to Way and Structures

246.08 miles of track were laid with 130-lb. rail, making a total of 1,279.66 miles of track now laid with this weight of rail.

240,410 cubic yards of stone and 31,117 cubic yards of prepared slag were used in standard ballasting on the main line.

A passing siding 3,389 feet in length was constructed and extensions, aggregating 5,076 feet, were made to existing passing sidings.

A one-story brick passenger station building was constructed at Tazewell, Va., and stations at Martinsville and Plasterco, Va., were enlarged.

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The new yard at Winston-Salem, N. C., including 14 yard tracks, sundry running, car repair, and wye tracks, water station, shop and storage buildings, track scale of 200 tons capacity, flood light tower system and a second track between the old and new yards, was completed.

Additional fire protection was provided at Crewe, Shenandoah, Bristol and Richlands, Va., at Bluefield and Williamson, W. Va., and at Portsmouth, Ohio. A boiler washing plant, with pumps, a filter plant, and a new flood light tower system have been installed at Williamson, W. Va. A service tank of 50,000 gallons capacity was erected at Wheatland, W. Va. A pump house, with electric pump, pipe lines and a tank of 2,000 gallons capacity, was built at Cliff Yard, W. Va. An interlocking plant was built at Norfolk, Va.

High tension transmission lines were built between Roanoke and Arthur, Va., to improve automatic signal service and provide electric lighting of switch lamps, stations and pumps, and between Vera and Clifford, Ohio, to improve signal service and lower cost of operating signals, station and switch lighting and electric pumps.

Separation of grades at crossings and elevation of tracks, including crossings of the Baltimore and Ohio and Pennsylvania Railroads, over a distance of approximately 3 miles, at Columbus, Ohio, have been commenced.

Concrete overhead highway bridges were constructed at Ford, Blackstone and Ridgeway, Va., and at Winston-Salem and Ogburn, N. C. Concrete undergrade crossings were constructed at Sutherland, Poole and Dewey, Va., and at Portsmouth and Cincinnati, Ohio.

Twenty grade crossings were eliminated during the year, five by construction of overhead bridges, five by construction of undergrade crossings and ten by changes in road.

118 linear feet of new steel bridges were constructed, 527 linear feet of light steel bridges were replaced by standard steel structures, and 117 linear feet of light steel bridges were replaced with fit steel doubled.

157 linear feet of timber trestle were filled, 624 linear feet were replaced with fit steel and 59 linear feet were replaced with reinforced concrete culvert.

Maintenance Expenditures

The charges to Maintenance of Way and Structures Accounts were as follows:

	1928	1927	Decrease	Per Cent
Total Expenses	$15,475,724.65	$15,711,540.40	$235,815.75	1.50
Average per mile of road operated	6,904.31	7,008.61	104.30	1.49
Average per mile of track operated	3,453.28	3,531.62	78.34	2.22

The charges to Maintenance of Equipment Accounts were as follows:

	1928	1927	Increase or Decrease	Per Cent
Total Maintenance of Equipment Expenses	$19,933,551.65	$21,261,404.42	D. $1,327,852.77	6.2
In which are included:				
Steam Locomotives: Repairs, retirements and depreciation	9,882,797.16	9,913,600.14	D. 30,802.98	.3
Average per locomotive	11,401.08	10,840.46	I. 560.62	5.2
Average per 1000 locomotive miles	477.84	444.86	I. 32.98	7.4
Electric Locomotives (Double-units): Repairs, retirements and depreciation	298,422.02	346,887.32	D. 48,465.30	14.0
Average per locomotive	18,651.38	21,680.46	D 3,029.08	14.0
Average per 1000 locomotive miles	624.47	702.11	D. 77.64	11.1
Freight Train Cars: Repairs, retirements and depreciation	6,324,628.38	7,546,765.14	D. 1,222,136.76	16.2
Average per freight car	133.09	159.58	D. 26.49	16.6
Average per 1000 tons one mile	.42	.50	D. .08	16.0
Passenger Train Cars: Repairs, retirements and depreciation	911,315.03	924,669.88	D. 13,354.85	1.4
Average per passenger car	1,862.37	1,817.25.	I. 45.12	2.5
Average per 1000 passengers one mile	5.40	4.58	I. .82	17.9
Work Equipment: Repairs, retirements and depreciation	331,979.28	311,698.01	I. 20,281.27	6.5

There were in the shops undergoing and awaiting classified repairs at the close of the year 56 locomotives (30 of which needed only light repairs), or 6.7 per cent., 16 passenger cars, or 3.3 per cent., and 424 freight and work equipment cars, or .9 per cent.

Traffic and Operating Revenue Comparisons

Comparison of traffic and operating revenue figures with those of the preceding year shows the following changes:

Number of passengers	2,882,888	*decreased*	*720,541*	*20.00* per cent
Average haul of passengers	58.49 miles	increased	2.41 miles	4.30 "
Revenue from passenger fares	$5,726,833.34	*decreased*	*$1,166,874.26*	*16.93* "
Average rate per passenger per mile	3.396 cents	*decreased*	*.016 cents*	*.47* "
Revenue freight carried	54,053,476 tons	*decreased*	*793,084 tons*	*1.45* "
Average haul of freight	277.79 miles	increased	3.86 miles	1.41 "
Revenue from freight transportation	$97,501,583.52	*decreased*	*$2,490,651.58*	*2.49* "
Average rate per ton per mile	.649 cents	*decreased*	*.017 cents*	*2.55* "
Average tons of revenue freight per train mile	1,515.07	increased	50.46 tons	3.45 "
Shipments of coal	42,312,259 tons	*decreased*	*329,100 tons*	*.77* "
Shipments of coke	268,643 tons	*decreased*	*10,352 tons*	*3.71* "
Shipments of ore	443,227 tons	*decreased*	*90,589 tons*	*16.97* "
Shipments of pig and bloom iron	95,991 tons	*decreased*	*48,408 tons*	*33.52* "
Shipments of lumber	1,351,329 tons	*decreased*	*170,246 tons*	*11.19* "

The falling off in passenger traffic and revenue, to which reference was made in the preceding annual report, still continues. The number of passengers carried in 1928 was 3,360,590 less than in 1923, a decrease of 53.28 per cent., and although it has been possible to some extent to reduce expenses allocated to passenger service, the revenue from passenger fares in the same five-year period decreased $4,467,663.69, or 43.82 per cent.

Taxes

Accruals for taxes in the year amounted to $9,200,000, a decrease of $1,100,000 from the previous year. This amount was made up of United States Government taxes, $3,800,000, and State, County, and Municipal taxes, $5,400,000. United States Government taxes show a decrease, compared with the previous year, due in part to a reduction in rate of tax and in part to credit of an excess accrual of tax in previous years.

Relief and Pension Department

At the close of the year the Relief Fund had 20,991 members, equivalent to 77.20 per cent. of the total number of employees, a decrease in the year of 988 members and an increase of .01 per cent. in ratio of members to employees. The members of the Fund contributed during the year $757,308.13 and the Fund received additional income of $75,696.84 from interest and $838.82 from profit on securities matured. Against these total receipts of $833,843.79 death benefits aggregating $173,250.00 and sickness and accident disability benefits aggregating $383,-387.50 were paid, leaving a balance of $277,206.29, which was added to the Fund's credit balance now standing at $1,912,023.99 compared with $1,634,817.70 on December 31st, 1927. In the same period the Company paid the operating expenses of the Fund amounting to $134,030.60.

At the close of 1928 there were 701 employees on the Pension Roll, a net increase of 41 in the year, with an average pension of $618.60 per annum, compared with an average pension of $583.08 per annum at the close of 1927.

Pension Reserve Fund

In December, 1928, your Directors appropriated from Surplus the sum of $599,233.27, which was paid over to the Trustees of the Pension Reserve Fund, this amount being figured from actuarial tables as sufficient to take care of pensions to the 112 employees retired in the year 1928 so long as they may live. The total amount appropriated to date for this purpose is $3,355,233.27. In 1928 the fund was credited with interest, amortization and profit on sales of securities aggregating $102,990.89 and was charged with $412,376.65 paid to the Railway Company in reimbursement of pensions paid during the year. At the close of the year the Trustees held securities of a face value of $2,695,000, having a book value of $2,533,130.94, and $1,948.35 in cash.

Pocahontas Coal and Coke Company

Earnings for the year 1928 from royalties on total output of coal mined and coke manufactured were $1,470,059.92 and from other sources $162,833.65, making total earnings of $1,632,893.57 compared with $1,642,871.05 in 1927. Operating expenses were $179,729.55 and taxes $157,246.23, leaving net earnings of $1,295,917.79. Sinking fund and interest on funded debt, with other deductions, resulted in net income of $316,618.46, a decrease of $61,933.03 from that of the preceding year. The out-

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CONDENSED GENERAL BALANCE SHEET, DECEMBER 31st, 1928

ASSETS

				Comparison with Dec. 31st, 1927	
INVESTMENTS:					
Investments in Road and Equipment:					
Road		$300,125,018.45	.....	I.	$3,464,190.84
Equipment owned	$86,530,745.66				
Equipment in Trust	39,520,165.72	126,050,911.38	.....	I.	1,194,202.21
			$426,175,929.83		
Deposits in lieu of mortgaged property sold		.....	30,799.34	I.	8,109.56
Miscellaneous Physical Property		.....	3,980,525.57	D.	116,584.20
Investments in Affiliated Companies:					
Stocks: Pledged	$647,740.00				
Unpledged	1,471,601.42	$2,119,341.42	.....	I.	42,000.00
		598,452.50	.....	I.	334,045.00
Bonds		6,431,255.93	.....	I.	622,819.23
Advances			9,149,049.85		
Other Investments:		$25,000.00			
Stocks		31,074,720.04	.....	I.	8,201,254.90
Bonds			31,099,720.04		
Total Investments		.....	$470,436,024.63		
CURRENT ASSETS:					
Cash:					
In Treasury	$6,876,153.18				
In Transit	388,428.62				
Held in Trust for Relief Fund	66,824.22				
		$7,331,406.02	.....	I.	2,795,479.62
Loans and Bills Receivable		40,267.41	.....	D.	61,451.65
Traffic and Car-Service Balances Receivable		1,698,434.11	.....	I.	200,368.05
Net Balances Receivable from Agents and Conductors		263,687.80	.....	D.	39,508.97
Miscellaneous Accounts Receivable		878,838.33	.....	D.	489,394.72
Material and Supplies		10,218,721.91	.....	D.	3,643,903.99
Interest and Dividends Receivable		139,622.08	.....	I.	16,613.79
Other Current Assets		47,150.50	.....	I.	2,843.06
Total Current Assets		.....	20,618,128.16		
DEFERRED ASSETS:					
Working Fund Advances		$14,153.72	.....	D.	1,000.00
Norfolk and Western Railway Company and Pocahontas Coal and Coke Company Joint Purchase Money Mortgage Bonds		12,889,000.00	.....	D.	378,000.00
Cost of Securities held in trust for Relief Fund		1,845,199.77	.....	I.	279,291.32
Other Accounts		82,350.00	.....	D.	3,450.00
Total Deferred Assets		.....	14,830,703.49		
Trustees for Norfolk and Western Pension Reserve Fund		.....	2,537,006.36	I.	286,847.51
UNADJUSTED DEBITS:					
Rents and Insurance Premiums paid in advance		$124,015.42	.....	I.	96,688.12
Discount on Funded Debt		1,538,647.53	.....	D.	164,105.61
Other Unadjusted Debits		5,573,989.97	.....	I.	1,566,524.37
Securities Issued or Assumed—Unpledged					
Par Value of holdings at close of year	$87,100.00				
Total Unadjusted Debits		.....	7,236,652.92		
			$515,658,515.56	I.	$14,213,878.44

put of coal from the Company's leased property in 1928 was 14,198,379 gross tons and of coke 15,931 gross tons.

Under the sinking fund provision of the Pocahontas Coal Lands Purchase Money First Mortgage, dated December 2nd, 1901, $355,596.72 accrued from royalties on coal mined during the calendar year 1928. From the beginning of the operation of the sinking fund in 1906 to December 31st, 1928, the accruals from royalties have aggregated $6,490,643.68 and those from sales of lands $222,236.95, a total of $6,712,880.63 applicable to the purchase and retirement of mortgage bonds. Through this fund $7,111,000 of bonds had been purchased and cancelled to December 31st, 1928, and $372,000 subsequent thereto. The outstanding bonds on December 31st, 1928, were $12,889,000 and at the date of this report $12,517,000 out of original issue of $20,000,000.

A further payment of $330,000 has been made on account of indebtedness incurred in previous years to meet fixed charges, reducing this indebtedness to $315,000.

Big Sandy and Cumberland Railroad Company

The Big Sandy and Cumberland Railroad Company, the entire capital stock of which is owned by your Company, secured authority from the Interstate Commerce Commission, by order dated July 31st, 1928, to reconstruct its present narrow gauge line of railroad from Devon, W. Va., where it connects with the line of your Company, to Hurley, Va., a distance of 13.46 miles. The Interstate Commerce Commission's order also authorized the Big Sandy and Cumberland Railroad Company to construct a standard gauge extension from Hurley, Va., to Levisa Fork of Big Sandy River, a distance of 14.08 miles, and to relocate and reconstruct as a standard gauge line its existing narrow gauge line along Levisa Fork between Grundy, Va., and the state line between the states of Virginia and Kentucky, a distance of 13.3 miles. The total cost of this work is estimated at $8,360,000. The construction and reconstruction of this line has commenced.

The stockholders will be asked at the annual and special meeting on April 11th, 1929, to authorize the acquisition of the railroad, property, and franchises of the Big Sandy and Cumberland Railroad Company. Through this acquisition important areas of low volatile coal lands will be brought into the territory of your Company as reserves to protect and maintain the coal tonnages moving over your line in the future.

Guyandot and Tug River Railroad Company

The Guyandot and Tug River Railroad Company, the entire capital stock of which, except Directors' qualifying shares, is owned by your Company, was organized to construct a railroad beginning near the western end of Widemouth Branch in Wyoming County, W. Va., and extending through Wyoming and Mingo Counties, W. Va., to a connection with your main line at Wharncliffe, W. Va., a distance of 65.6 miles. In 1926 application was made by the Guyandot and Tug River Railroad Company to the Interstate Commerce Commission for a certificate of public convenience and necessity authorizing the construction of this line, and about the same time The Chesapeake and Ohio Railway Company and the Virginian Railway Company filed similar applications for authority to build lines to the same territory. On July 23rd, 1928, the Interstate Commerce Commission issued an order granting authority to and directing the Virginian Railway Company to build a line of railroad from a point near the beginning of the Guyandot and Tug River Railroad in Wyoming County, W. Va., to Gilbert, in Mingo County, W. Va., and authorized the Guyandot and Tug River Railroad Company to construct its line of railroad from a connection with the Virginian Railway at Gilbert to a connection with your main line at Wharncliffe, a distance of

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CONDENSED GENERAL BALANCE SHEET, DECEMBER 31st, 1928

LIABILITIES

				Comparison with Dec. 31st, 1927	
CAPITAL STOCK:					
Adjustment Preferred	$23,000,000.00				
Held in Treasury	7,700.00				
		$22,992,300.00			
Common	$140,290,700.00				
Held in Treasury	2,400.00				
		140,288,300.00	.....	I.	$282,000.00
Total Capital Stock		.....	$163,280,600.00		
LONG TERM DEBT:					
Mortgage Bonds	$95,301,500.00				
Held in Treasury	36,000.00				
		$95,265,500.00	.....	D.	23,000.00
Convertible Bonds	$876,300.00				
Held in Treasury	31,000.00				
		845,300.00	.....	D.	313,000.00
Equipment Obligations	$16,880,000.00				
Held in Treasury	10,000.00				
		16,870,000.00	.....	D.	3,140,000.00
Total Long Term Debt		.....	112,980,800.00		
CURRENT LIABILITIES:					
Traffic and Car-Service Balances Payable		$755,872.08	.....	I.	198,781.82
Audited Accounts and Wages Payable		3,506,908.99	.....	D.	687,472.54
Miscellaneous Accounts Payable	$227,550.00				
Relief Fund (Cash held in trust)	66,824.22	294,374.22	.....	D.	298,240.69
Interest Matured Unpaid		39,674.00	.....	D.	14,191.00
Dividends Matured Unpaid		13,356.50	.....	I.	3,534.75
Funded Debt Matured Unpaid		6,000.00			
Unmatured Dividends Declared		229,923.00			
Unmatured Interest Accrued		1,552,490.00	.....	D.	39,165.00
Total Current Liabilities		.....	6,398,598.79		
DEFERRED LIABILITIES:					
Cost of Securities Purchased for Relief Fund		$1,845,199.77	.....	I.	279,291.32
Other Accounts		71,236.76	.....	D.	13,604.22
Total Deferred Liabilities		.....	1,916,436.53		
JOINT LIABILITIES:					
Norfolk and Western Railway Company and Pocahontas Coal and Coke Company Joint Purchase Money Mortgage Bonds		.....	12,889,000.00	D.	378,000.00
UNADJUSTED CREDITS:					
Tax Liability		$6,493,639.30	.....	D.	577,282.70
Insurance and Casualty Reserves		200,799.10	.....	I.	16,601.22
Accrued Depreciation—Road		10,948,180.69	.....	I.	726,357.99
Accrued Depreciation—Equipment		31,959,289.80	.....	I.	1,568,130.34
Accrued Depreciation—Miscellaneous Physical Property		1,054,735.34	.....	I.	176,790.23
Other Unadjusted Credits		3,117,888.48	.....	I.	285,430.93
Total Unadjusted Credits		.....	53,774,532.71		
CORPORATE SURPLUS:					
Norfolk and Western Pension Reserve (*Held by independent Trustees.*)		.....	2,537,006.36	I.	286,847.51
Additions to Property through Income and Surplus:					
Road	$21,090,417.66				
Equipment	23,305,176.27				
Total Appropriated Surplus		$44,395,593.93	.....	I.	40,736.43
Profit and Loss—Balance		117,485,947.24	.....	I.	15,833,332.05
Total Corporate Surplus		.....	161,881,541.17		
			$515,658,515.56	I.	$14,213,878.44

10.5 miles, the estimated cost of which will be $2,500,000. In compliance with the order of the Interstate Commerce Commission, construction on the line from Gilbert to Wharncliffe has commenced. This line will enable your Company to continue in sharing with The Chesapeake and Ohio Railway Company the important coal traffic originating on the Virginian and moving to the West.

Industries

During the past year there were located on your Company's lines ninety-eight new industries with a total capitalization of $53,800,000, employing 7,767 persons.

Obituary

Samuel Rea, a Director of the Company from June 13th, 1900, to December 27th, 1912, and from June 1st, 1918, to the time of his death, died at his home in Gladwyne, Pennsylvania, on March 24th, 1929, in his seventy-fourth year. In his long connection with the Board he brought to it and to your Company a long and varied experience with large engineering problems and a grasp of business conditions that made his counsel of the highest value. The success which the Company has achieved is largely due to his informed advice concerning engineering matters, new operating facilities and financial and other problems.

Thomas S. Southgate of Norfolk, Va., a member of the Board of Directors since March 22nd, 1927, died suddenly on September 27th, 1928. Mr. Southgate was born in Richmond, Va., February 7th, 1868, and acquired his education in the schools of that city and privately. Mr. Southgate's death is a great loss to your Company and to the shipping industry of the Atlantic seaboard. His knowledge of transportation and maritime affairs was thorough, and his vision of the future of the City of Norfolk, Va., was an inspiration to those associated with him.

Alexander Kearney, Superintendent Motive Power, died on May 19th, 1928. Mr. Kearney had served the Company in its Motive Power Department for more than 23 years, and had been Superintendent Motive Power since November 1st, 1918.

Change in Board of Directors

At a meeting of the Board of Directors held November 27th, 1928, the vacancy in the Board occasioned by the death of Thomas S. Southgate was filled by the election of Samuel L. Slover of Norfolk, Va.

The Board expressed to the officers and employees its appreciation of the fidelity and efficiency with which they have served the Company throughout the year.

By order of the Board of Directors,

A. C. NEEDLES,

President.

[ADVERTISEMENT]

Railway Officers

Executive

E. C. Mann, assistant secretary and assistant treasurer of the Wabash, has been elected vice-president, secretary and treasurer, with headquarters as before at New York.

P. J. Flynn, vice-president in charge of traffic of the Delaware, Lackawanna & Western, with headquarters at New York, will retire from active duty on April 15. Mr. Flynn was born at Granville, N. Y., on March 12, 1856. He entered railway service in 1870 with the Philadelphia & Reading. He subsequently served as telegraph operator and clerk with several eastern roads until January, 1880, when he entered the service of the Atchison, Topeka & Santa Fe as station agent at Trinidad, Colo. In 1883 he became general agent of that road at Salt Lake City, Utah, later serving in the same capacity successively at Cincinnati, O., and Denver, Colo. In November, 1887, he was appointed general agent and assistant superintendent in charge of the Denver terminals. Two years later he became general western freight and passenger agent of the Missouri Pacific at Denver and in April, 1890, he became general freight and passenger agent of the Rio Grande-Midland route, which was composed of the Colorado Midland, the Denver & Rio Grande and the Rio Grande Western lines. From April, 1891, to September, 1899, Mr. Flynn was commissioner of the Colorado-Utah Traffic Association, the Denver Texas & Ft. Worth Association and

P. J. Flynn

the Local Utah Railway Association. From January, 1892, to September, 1899, he was also chairman of the Colorado Passenger Association. In September, 1899, he became general freight agent for the Delaware, Lackawanna & Western and in March, 1903, he was appointed freight traffic manager of the same road. He held the latter position until November, 1911, when he was appointed vice-president in charge of traffic. During federal control, from July, 1918, to March, 1920, Mr. Flynn served as secretary and treasurer of the Delaware, Lackawanna & Western, resuming his duties as vice-president in charge of traffic at the end of federal control and serving in that position continuously up to the present time.

Financial, Legal and Accounting

W. E. Roberts, Jr., has been appointed tax agent of the Columbus & Greenville, with headquarters at Columbus, Miss., succeeding **C. N. Freeman,** resigned.

Operating

F. W. Brown, assistant to the general manager of the Atlantic Coast Line, with headquarters at Wilmington, N. C., has been appointed assistant general manager, with the same headquarters.

T. W. Cardwell, trainmaster on the Salt Lake division of the Southern Pacific at Carlin, Nev., has been transferred to the New Mexico division, with headquarters at Carrizozo, N. M., succeeding **B. H. Horton,** who has been assigned to other duties.

W. R. Barr, train dispatcher on the Mobile & Ohio at Murphysboro, Ill., has been promoted to trainmaster of the St. Louis division, with headquarters at the same point, succeeding **R. B. McAlpin,** who has been transferred to the Mobile division, with headquarters at Meridian, Miss.

C. C. Kratky, chief clerk to the president of the St. Louis-San Francisco, has been promoted to assistant to the vice-president in charge of operation, with headquarters as before at St. Louis, Mo. Mr. Kratky succeeds **A. H. Jones,** who on April 1 was elected a member of the Southwestern Regional Train Service Board of Adjustment, with headquarters at St. Louis.

W. W. Weiss, superintendent of the Toledo territory of the Wheeling & Lake Erie and the Lorain & West Virginia, with headquarters at Toledo, Ohio, has been promoted to superintendent of car service, with headquarters at Brewster, Ohio, succeeding **D. J. Morris,** who has been assigned to other duties. **F. M. Shelton** has been appointed superintendent of the Toledo territory, replacing Mr. Weiss.

C. E. Urbahns, general superintendent of the Soo district of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn, has been promoted to general manager of the Duluth, South Shore & Atlantic and the Mineral Range, with headquarters at Marquette, Mich., succeeding **Charles E. Lytle,** who on April 1, upon reaching the age of 70 years, was appointed assistant to the vice-president. Mr. Lytle will continue to serve as manager of the Machinac Transportation Company, which operates car ferries between St. Ignace, Mich., and Mackinaw City. **Edwin H. Buhlmann,** superintendent of the Stevens Point division, with headquarters at Stevens Point, Wis., has been promoted to general superintendent of the Western district, a newly created district, which will consist of the Twin City Terminal, the Duluth-Superior, the Minnesota, the Winnipeg and the Missouri River divisions, with headquarters at Minneapolis. **A. N. Williams,** general superintendent of the Chicago district, has been appointed general superintendent of the newly created Eastern district, which will be made up of the Chicago Terminal, the Fond du Lac, the Stevens Point and the Gladstone divisions, with headquarters as before at Minneapolis. The Chicago and Soo districts have been abolished. **Edwin D. Jones** has been appointed acting superintendent of the Stevens Point division, temporarily, succeeding Mr. Buhlmann. **Bertram G. Cross,** trainmaster of the Second district of the Fond du Lac division, with headquarters at Fond du Lac, Wis., has been transferred to the Stevens Point division, with headquarters at Stevens Point. **Ralph O. Jensen** has been appointed trainmaster of the Second district of the Fond du Lac division, succeeding Mr. Cross. **Samuel A. Towne** has been appointed trainmaster of the Duluth-Superior division, with headquarters at Superior, Wis.

Traffic

L. H. Trimble has been appointed general agent of the Southern Pacific, with headquarters at Detroit, Mich., to succeed W. W. Hale, who has been promoted.

Fred C. Lyden, city passenger agent of the Canadian Pacific with headquarters at Montreal, Que., has been appointed general agent with headquarters at the same point.

D. J. Howe, chief clerk to the manager of the fuel department of the Norfolk & Western, with headquarters at Bluefield, Va., has been appointed district manager of the company's newly established coal bureau at Chicago.

Alfred Fynn, traveling passenger agent for the Erie at Chicago, has been promoted to general agent of the passenger department at Buffalo, N. Y., succeeding **C. M. Knowles,** who has resigned to become connected with the United Fruit Company at New York.

W. H. Chisholm, assistant European traffic manager of the Illinois Central, the Central of Georgia and the Ocean

Steamship Company of Savannah, has been promoted to European traffic manager, with headquarters as before at London, Eng., succeeding **Donald Rose**, deceased.

Nathaniel Duke, general freight traffic manager of the Delaware, Lackawanna & Western, with headquarters at New York, has been appointed vice-president in charge of traffic, to succeed P. J. Flynn, who will retire April 15. Mr. Duke was born on May 29, 1863 at Prince Frederick, Calvert County, Md. He entered railway service in July, 1881, with the Baltimore & Ohio, and until December, 1885, held various clerical positions with that road. In January, 1886, he entered the service of the Chicago, Burlington & Quincy as waybill clerk, and in August of the following year he was appointed assistant chief rate clerk in the general freight office at Chicago, where he remained for two years. He was chief clerk in the general office at St. Louis for a year and then became chief contracting agent. He held this position until December, 1892, when he became assistant general agent for the Great Northern at Chicago, remaining there until November, 1894. He served as agent for the Elgin, Joliet & Eastern for almost two years and in July, 1896, he entered the service of the Nickel Plate Fast Freight Line. In October, 1898, he became commercial agent for the West Shore at New Haven,

Nathaniel Duke

Conn., holding that position until January, 1902, when he became New England agent for the Lehigh Valley. From September, 1902, to April, 1903, Mr. Duke was general New England agent for the Delaware, Lackawanna & Western, later becoming general eastern freight agent at New York, which position he held until 1909. He then became general freight agent and in November, 1911, he was appointed assistant freight traffic manager. During federal control Mr. Duke was official classification territory assistant to Conrad Spens, traffic director of the Food Administration at New York. In July, 1918, he returned to the Delaware, Lackawanna & Western as freight traffic manager, retaining this position during the balance of the federal control period, and continuing in that capacity until February, 1926, when he was promoted to the position of general freight traffic manager, which position he held at the time of his recent promotion which is effective April 15.

Joseph J. Byrne, freight traffic manager of the Delaware, Lackawanna & Western, with headquarters at New York, has been appointed general freight traffic manager, with the same headquarters, succeeding N. Duke, promoted. Mr. Byrne was born in 1871 at Riley, O. He was educated in the public schools of Indianapolis, Ind., and entered railroad service in 1887. From that date until 1892, he served consecutively as telegraph operator and traffic agent for the Cleveland, Cincinnati, Chicago & St.

Joseph J. Byrne

Louis. From 1892 to 1897, he was contracting agent for the Nickel Plate Fast Freight Line at Indianapolis, then serving as agent for the Delaware, Lackawanna & Western at the same point. From 1900 to 1905, he was commercial agent for the latter road at Cleveland, O. He was then appointed division freight agent of the same road at Syracuse, N. Y., where he remained until 1909. Mr. Byrne was general eastern freight agent at New York from November, 1909 to 1917 and the following year he was appointed assistant general freight agent. He became general freight agent in February, 1919, and in March, 1920, he was promoted to the position of assistant freight traffic manager. In February, 1926, he was promoted to freight traffic manager, in which position he served until his recent promotion, which becomes effective April 15.

Charles F. McTague, assistant freight traffic manager of the Delaware, Lackawanna & Western, with headquarters at New York, has been appointed freight traffic manager, with the same headquarters. Mr. McTague was born on July 2, 1875, at Galt, Ont. He entered railway service in 1892 in the local freight office of the Canadian Pacific at Galt. In June, 1893, he entered the service of the Michigan Central as rate clerk at Buffalo. He was appointed chief clerk to the general eastern freight agent of the Delaware, Lackawanna & Western at New York, in September, 1899, and in 1903 he was appointed contracting freight agent. He was appointed commercial agent for the same road at Cleveland, O., in December, 1905, and in July, 1909, he was promoted to the position of general eastern freight agent at New York. In November of the

Charles F. McTague

same year he was appointed assistant general freight agent at Buffalo and in July, 1924, he was promoted to general foreign freight agent at New York. He held the latter position until February, 1926, when he was appointed assistant freight traffic manager, which position he held at the time of his recent promotion, which becomes effective April 15.

Albert B. Wallace, general freight agent of the Delaware, Lackawanna & Western, with headquarters at New York, has been promoted to assistant freight traffic manager, with the same headquarters, succeeding C. F. McTague, promoted. **Maurice Williams**, assistant general freight agent at New York, will

Albert B. Wallace

succeed Mr. Wallace as general freight agent at that point. He will in turn be succeeded by **George Herbert**, now representative in the general freight traffic manager's office at New York. Mr. Wallace was born in Gault, Ontario. He entered railway service as a messenger boy for the Great Western Rail-

way of Canada, at Hamilton, Ont. He subsequently served in a similar position on the Canadian Southern at Buffalo. He later served as a clerk for the Chicago, St. Paul, Minneapolis & Omaha at St. Paul, as stenographer for the Illinois Central at New Orleans, La., and as stenographer and chief clerk for the Michigan Central at Buffalo, N. Y. He was appointed chief clerk in the general freight traffic department of the Delaware, Lackawanna & Western at New

Maurice Williams

York in 1889, later being promoted to assistant general freight agent. He was appointed general freight agent in 1926. Mr. Williams was born in Leamington, England. He started work on the London & Northwestern at Liverpool, Eng., coming to America in 1898 and entering the freight department of the Missouri Pacific at Kansas City. In 1902 he came east and served in a similar capacity with the Erie. The following year he served in the billing office of the Old Dominion Steamship Company in New

George Herbert

York and in 1906 he was rate clerk for the Mallory Steamship Line at the same point. He entered the service of the Delaware, Lacakawanna & Western in October, 1907, as rate clerk in the general freight traffic department. He was appointed chief clerk in 1909 and in 1918 he was made assistant to the freight traffic manager. On March 1, 1920, Mr. Williams was appointed assistant general freight agent, serving in that capacity until his recent appointment as general freight agent. George Herbert entered the service of the Lackawanna as a stenographer in the freight department in 1907. He was promoted to the position of traveling freight agent at New Haven Conn., in 1918 and in 1920 he was appointed representative in the general freight traffic manager's office. The above appointments become effective on April 15.

Engineering, Maintenance of Way and Signaling

C. B. Huffman, assistant engineer on the Missouri Pacific at Falls City, Neb., has been promoted to division engineer of the Central division, with headquarters at Van Buren, Ark.

W. F. Bucknell, master carpenter on the Chicago, Burlington & Quincy at Creston, Iowa, has been promoted to supervisor of bridges of Lines West of the Missouri river with headquarters at Lincoln, Neb., succeeding **E. M. Anderson,** deceased.

Henry S. Loeffler, who has been promoted to bridge engineer of the Great Northern, with headquarters at St. Paul, Minn., has been connected with the engineering department of that railway for more than 13 years. He was born on August 24, 1889, on a farm in Rock County, Minn., and graduated from a five-year course in civil and electrical en-

Henry S. Loeffler

gineering at the University of Minnesota in 1915. In April of that year Mr. Loeffler entered railway service as a bridge inspector on the Northern Pacific, later in 1915 serving as a laboratory assistant at the University of Minnesota. He entered the service of the Great Northern in October, 1915, as an assistant engineer, then serving successively in that position and as a draftsman until March, 1918, when he became an assistant engineer in war service with the United States Emergency Fleet Corporation. He returned to railway service in April, 1918, as an assistant engineer on the Great Northern. Here he served on the lines between Williston, N. D., and Spokane, Wash., handling special design and construction work until his promotion to bridge engineer on February 25.

Mechanical

Edward Pool has been appointed master mechanic of the Delaware division of the Erie, with headquarters at Port Jervis, N. Y., succeeding **J. H. Winfield,** who has been granted a leave of absence.

J. F. Kimbell has been appointed master mechanic of the New Mexico division of the Southern Pacific, with headquarters at Tucumcari, N. M., succeeding **E. Gordon,** who retired on April 1.

Obituary

Charles F. Stewart, manager of the troop movement section of the American Railway Association, with office at Washington, D. C., died on April 2 at his home.

E. M. Anderson, supervisor of bridges of the Chicago, Burlington & Quincy Lines West of the Missouri river with headquarters at Lincoln, Neb., died at his home in that city on February 13.

A. Moritz, superintendent of transportation of the Atlanta & West Point, with headquarters at Atlanta, Ga., died suddenly at his home in that city on March 31. Mr. Moritz had been in the employ of the Atlanta & West Point for the past 25 years, having served as superintendent of transportation for the last ten years.

Tyson S. Dines, who was formerly general attorney of the Terminal Railroad Association of St. Louis and general counsel of the Denver & Salt Lake, died at Denver, Colo., on March 28 at the age of 71 years. Mr. Dines was general counsel of the D. & S. L. from 1914 to 1917 and general attorney of the Florence & Cripple Creek (now part of the Cripple Creek & Colorado Springs) in 1900. At the time of his death he was the senior member of the law firm of Dines, Dines & Holmes.

Walter R. Baker, former secretary and assistant to the president of the Canadian Pacific at Montreal, Que., died in that city on April 1, at the age of 77. Mr. Baker was born in England in 1852 and entered railway service in 1873 as local freight and passenger agent for the Canadian Central at Ottawa, Canada. He subsequently served in various positions with the Canadian Pacific. In May, 1901, he was appointed assistant to the vice-president of the Canadian Pacific and in September, 1905, he was also appointed secretary of that road. He served in this capacity until January 1, 1917, when he retired from active railroad work.